CHINA'S CORPORATE TAX MANAGEMENT AND ITS ECONOMIC CONSEQUENCES

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CHINA'S CORPORATE TAX MANAGEMENT AND ITS ECONOMIC CONSEQUENCES

ABSTRACT

Since economic reforms began in 1978, China's enterprises have undergone considerable changes. So too have the taxation system have experienced major reforms over the last three decades to closely resemble those of the market economies, which included the introduction of corporate income taxes in the country. Since corporate tax is a significant cost to enterprises, firms have introduced corporate tax management to strengthen financial decision-making. The extant theories on corporate tax management have not always been consistent, which is more so with the empirical evidence from China given its unique transition from a socialist structure to one where the market have gradually increased its role in the economy. Given the complexity of the economy and still paramount role of the state in the economy there are still loopholes that corporations often exploit to their advantage, which may make tax management in Chinese listed companies inefficient and unpredictable. The central objective of this study is to analyze the economic consequences of corporate tax management in China. In doing so, the study posits the following three research questions: firstly, what is the impact of corporate tax management on firm performance and how tax management can help maximize firm value?; secondly, what are the market outcomes of corporate tax management and how does government ownership influence these outcomes?; and thirdly, what is the impact of corruption and marketization on corporate tax management, and how do they affect firm performance? The results show that that corporate tax management has a negative direct impact on firms' market value, which support the agency theory of tax management. Nevertheless, corporate tax management can promote market value through the indirect improvement of firms' profitability and growth, which suggests that tax management can

help but they need the deployment of a sound and effective corporate governance mechanism. Next, the findings show that corporate tax management has the potential to cause adverse future market outcomes so as to cause stock price crashes, which support the bad news hoarding theory. The evidence shows that state ownership cannot alleviate this crash risk. Indeed, municipal listed state-controlled enterprises are more likely to face future crash risks than other enterprises. Finally, the findings show that corruption affects corporate tax management non-linearly in China, which support the theories of "grabbing hand" and "helping hand". Moreover, corruption positively affects the performance of corporate tax management. Furthermore, marketization helps to mitigate the impact of corruption on corporate tax management at both phases of the inverted U-shaped curve. Overall, the thesis shows that corporate tax management is an important financial strategy that can be designed to enhance the wealth of shareholders. However, due to agency problems, the real consequences of tax management have remained uncertain. The solution to addressing agency problems is to bolster enterprise management with sound internal corporate governance through effective coordination with external markets and institutional development.

Key words: Corporate Tax management, Economic performance, China's listed enterprises, Socialist structure, Marketization

PENGURUSAN CUKAI KORPORAT CHINA DAN KESAN-KESAN EKONOMINYA

ABSTRAK

Sejak reformasi ekonomi China bermula pada tahun 1978, perusahaan China telah mengalami perubahan yang besar. Begitu juga dengan sistem cukai yang telah mengalami perubahan mendadak sejak tiga dekad yang lalu, termasuk perlaksanaan cukai pendapatan korporat di negara ini. Oleh kerana cukai korporat merupakan satu kos yang signifikan, firma-firma telah memperkenalkan pengurusan cukai korporat untuk mengukuhkan pembentukan keputusan hal ehwal kewangan. Teori-teori yang wujud sekarang tidak konsisten, terumatanya disebabkan struktur unik China yang mengalami peralihan daripada sistem sosialis untuk menerima sifat-sifat pasaran. Memandangkan kompleksiti ekonomi dan peranan pemerintah yang utama dalam ekonomi China, masih terdapat kekurangan yang dapat dieksploitasi oleh syarikat demi faedah mereka, yang boleh menjadikan pengurusan cukai antara syarikat yang berdaftar kurang cekap dan tak pasti. Objektif utama kajian ini adalah untuk menganalisis kesan-kesan ekonomi pengurusan cukai korporat di China. Dengan itu, kajian ini menegaskan tiga persoalan kajian berikut: pertamanya, apakah kesan pengurusan cukai korporat pada prestasi syarikat dan bagaimanakah pengurusan cukai boleh membantu memaksimumkan prestasi syarikat? keduanya, apakah hasil ekonomi daripada pengurusan cukai korporat dan bagaimanakah hak-milik kerajaan mempengaruhi hasil tersebut? ketiganya, apakah kesan rasuah dan pengpasaran ke atas pengurusan cukai syarikat, dan bagaimanakah ia mempengaruhi prestasi syarikat? Hasil kajian menunjukkan bahawa pengurusan cukai syarikat membawa kesan negatif terhadap nilai pasaran firma, yang disokong oleh teori agensi pengurusan cukai. Namun demikian, pengurusan cukai syarikat boleh mendorong peningkatan nilai pasaran firma melalui pengingkatan keuntungan secara tak langsung yang menunjukkan bahawa pengurusan cukai korporat boleh membantu tetapi ia perlukan

mekanisme tadbiran urus syarikat yang berkesan. Seterusnya, hasil kajian menunjukkan bahawa pengurusan cukai korporat mempunyai potensi untuk memudaratkan hasil pasaran masa depan untuk menyebabkan kemuncupan harga saham, yang menyokong teori penimbunan buruk. Penemuan menunjukkan bahawa hak-milik pemerintah tidak boleh mengelakkan risiko pengecutan ini. Sesungguhnya, perusahaan yang dikawal diperingkat bandar lebih cenderung untuk menghadapi risiko pengecutan daripada perusahaan lain. Akhirnya, dapatan menunjukkan bahawa rasuah menjejaskan pengurusan cukai syarikat secara tidak linear di China, yang menyokong teori *grabbing hand* dan *helping hand*. Rasuah didapati mempengaruhi prestasi pengurusan cukai syarikat secara positif. Maka, proses pengembangan peranan pasaran adalah penting untuk mengurangkan kesan rasuah dalam pengurusan cukai syarikat pada kedua-dua fasa keluk terbalik "U". Pada keseluruhannya, tesis ini menunjukkan bahawa pengurusan cukai syarikat adalah satu strategi penting dalam pengurusan kewangan yang boleh digubal untuk meningkatkan kekayaan pemegang saham. Walau bagaimanapun, disebabkan masalah agensi kesan benar pengurusan cukai korporat masih tak pasti. Penyelesaian untuk menangani masalah agensi adalah untuk meningkatkan pengurusan syarikat dengan tadbir urus korporat dalaman melalui penyelarasan yang berkesan dengan pasaran luar dan pembangunan institusi.

Kata kunci: Pengurusan cukai korporat, Prestasi ekonomi, Perusahaan berdaftar China, Struktur sosialis, Pengembangan peranan pasaran

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LIST OF SYMBOLS AND ABBREVIATIONS

A:		
AGFI	:	Adjusted goodness of fit index
AVE	:	Average variance extracted
B:		
BTD	:	Book-tax difference
C:		
CFA	:	Confirmatory factor analysis
CFI	:	Comparative fit index
CPI	:	Corruption Perceptions Index
CR	:	Composite reliability
CSMAR	:	China Stock Market and Accounting Database
CSRC	:	China Securities Regulatory Commission
CSRCIC	:	China Securities Regulatory Commission Industry Classifications
D:		
DTAX	:	Residual book-tax difference measure
DUVOL	:	Down-to-up volatility
E:		
ETR	:	Corporate effective tax rate
F:		
FE	:	Fixed-effect models
FLTRT	:	Policy of first levying and then rebating taxes
G:		
GFI	:	Good-of-fit index
GMM	:	Generalized methods of moments
L:		
LSOEs	:	Listed state-owned/controlled enterprises
N:		
NCSKEW	:	Negative conditional return skewness
NFI	:	Normed fit index
NPC	:	National People's Congress
O:		
OLS	:	Ordinary Least Squares
R:		
RMR	:	Root-mean-square residual
RMSEA	:	Root-mean-square error of approximation
S:		
SASAC	:	State-owned Assets Supervision and Administration Commission of the State Council

SAT	:	State Administration of Taxation
SEM		Structural equation modeling
SOEs	:	Refer to all state-owned/controlled enterprises

V:

VIF	:	Variance inflation factor

LIST OF CHINESE TERMS IN CHINESE AND PINYIN

D:

dishuiju	:	Local Taxation Bureau

F:

fangquan rangli	:	Decentralization of power and transfer of profits
fubuji	:	Administrative rank at vice-ministerial

G:

gongzuo danwei	:	Work units
guanxi	:	Relationship-oriented market
guoshuiju	:	National Taxation Bureau

L:

ligaishui	:	Replacement of profit by tax; Substitution of tax payment for profit delivery

Q:

qianguize	:	Hidden rules of the game

T:

tiefanwan	:	Workers of state-owned enterprises were seen as owning an "iron rice bowl"

Y:

yangqi	:	Central state-owned enterprises

Z:

zhuada fangxiao	:	The strategy of SOEs reform in China is "grasping the large SOEs, letting go the small SOEs"
zhengtingji	:	Administrative rank at department-level

LIST OF APPENDICES

CHAPTER 1: INTRODUCTION

This first chapter sets the stage for understanding the importance and nature of the subject to be studied in this thesis. It begins by providing the background of this study, including China's tax system reforms, and presents the motivation for undertaking this study. In light of the background and motivation of the study, this chapter presents the problem statement and research questions. In this process, the term of corporate tax management defined. The organizational structure of this thesis is summarized in the last section of this chapter.

1.1. Background of Study

Corporate taxation has a multiple role for stakeholders including governments and enterprises. From the perspective of government, corporate taxation is important to generate fiscal revenue, which is necessary to finance infrastructure construction, and the provision of public goods. From the perspective of enterprises, corporate tax management can help generate significant cost reduction and manage better cash flows available to the enterprises. Thus, there are incentives for enterprises to manage better taxes, and corporate tax management has thus been introduced in enterprises as a strategy to reduce the corporate tax burden, which is a key strategy used by modern enterprises.

Research on corporate tax management in China is still in its infancy. From a traditional view of corporate tax management, it represents an activity of transferring wealth from the state or government to shareholders (Mihir A. Desai & Dhammika Dharmapala, 2009). But it is too idealistic to assume that such management activities can always increase firm value as there can be agency conflicts between principals and agents

inherent in public listed firms. Therefore, corporate tax management can be employed to facilitate managerial opportunism (Desai & Dharmapala, 2006; Mihir A. Desai & Dhammika Dharmapala, 2009), causing uncertainty in the outcomes of such management activities. Hence, the consequences of tax management have generated widespread attention among stakeholders and researchers.

Moreover, in the setting of modern corporations with separation of ownership and control, firms' internal and external factors will influence the ultimate outcomes of tax management, such as corporate governance, institutional environment, and legislation protection (Lee, Dobiyanski, & Minton, 2015; Li, Luo, Wang, & Foo, 2016; Minnick & Noga, 2010). Compared to developed countries with a sound and comprehensive legal protection system, the undeveloped external environment in emerging countries would likely give rise to more uncertainty in the outcomes of corporate tax management.

Since Chinese economic reforms and opening-up policy began in 1978, the economy has experienced remarkable changes and achieved a "growth miracle". However, its corporate tax system is still at an early and exploratory stage, which is far from being complete (Hussain & Zhuang, 2013). Specifically, the collection of corporate income tax has become the second largest government tax revenue which started in 1980s, while before the 1980s China had in place a centrally-planned economy model modelled from the Soviet Union. The national economy was almost controlled by wholly state-owned enterprises, with all their profits enjoyed directly by the state instead of through taxes. Then in 1984, China implemented the "replacement of profit by tax" (*ligaishui*, see the following section) on state-owned enterprises. But at that time, China was still a command economy, which meant that Its enterprises income taxes were much different from their counterparts in a market economy. Because the government fully controlled wages and prices, there was no motivation to undertake rent-seeking.

To continue to deepen economic reforms and enhance efficiency of state-owned enterprises, China adopted enterprise reforms using a process of corporatization and privatization. A Company Law was promulgated in December 1993 to provide a legal framework for corporatizing state-owned enterprises, and to transform traditional state enterprises into modern corporations with clear property rights. Then, while maintaining the controlling rights of state enterprises, the government corporatized the largest state-owned enterprises and "pillar industries" and promoted the privatization of small- and medium-size state-owned enterprises. At the same time, the government began to change the relationship between government and enterprises, eliminated monopoly in purchasing and marketing, and reduced direct administrative control, replacing it with "decentralization of power and transfer of profits" (*fangquan rangli*) to state owned enterprises and their managers. Thus, managers have been given decision-making authority, as well as, their salaries have been tied to enterprise's achievement. These changes have not only been significant in determining the amount of tax revenue generated, they have also opened up possibilities and motivations to enterprises to engage in tax management. Thus, the phenomenon of agent moral hazard has emerged in China. Thereby, corporate taxes have become an important topic among Chinese enterprises.

Moreover, because the establishment and development of the modern Chinese tax system and market mechanism is still relatively new, it is beset by many problems and deficiencies, leaving ample room for opportunist behavior. Corporate tax management provides the tools to encourage such behavior. Therefore, the research of corporate tax management in China is relatively new and is still in its infancy so that more work needs be done to enrich it so as to provide useful guideline to investors, shareholders, and policymakers. In addition, because China is still a developing and transitional country, it may offer helpful lessons for other developing and transition countries.

Table 1.1 and Figure 1.1 show Chinese national tax revenues collected from the top main tax categories during 2005 to 2015. The green line in Figure 1.1 shows that corporate income tax is the second largest national tax revenue in China, and that it increased sharply from 1.28 trillion to 2.71 trillion during 2010 to 2015.

Table 1.1: National Tax Revenue from 2005 to 2015

	Domestic VAT (100 million)	Business tax (100 million)	State excise tax (100 million)	Tariff (100 million)	Personal income tax (100 million)	Corporate income tax (100 million)
2005	10792.11	4232.46	1633.81	1066.17	2094.91	5343.92
2006	12784.81	5128.71	1885.69	1141.78	2453.71	7039.60
2007	15470.23	6582.17	2206.83	1432.57	3185.58	8779.25
2008	17996.94	7626.39	2568.27	1769.95	3722.31	11175.63
2009	18481.22	9013.98	4761.22	1483.81	3949.35	11536.84
2010	21093.48	11157.91	6071.55	2027.83	4837.27	12843.54
2011	24266.63	13679.00	6936.21	2559.12	6054.11	16769.64
2012	26415.51	15747.64	7875.58	2783.93	5820.28	19654.53
2013	28810.13	17233.02	8231.32	2630.61	6531.53	22427.20
2014	30855.36	17781.73	8907.12	2843.41	7376.61	24642.19
2015	31109.47	19312.84	10542.16	2560.84	8617.27	27133.87
Source from: National Bureau of Statistics of China						

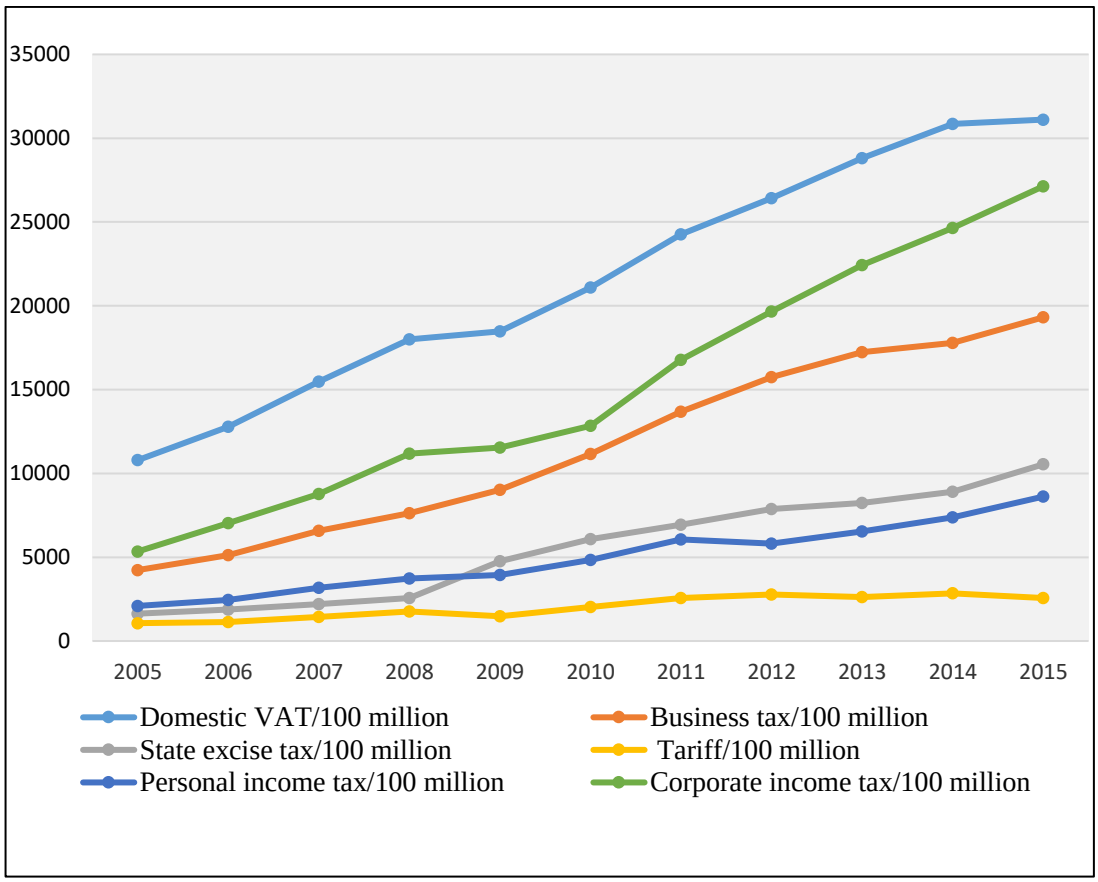

Figure 1.1: National Tax Revenue from 2005 to 2015
(Source from: National Bureau of Statistics of China)

1.2. China's Tax System Reforms

Since China's economic reform and opening-up begun in 1978, Chinese enterprises have started to modernize. The tax system reform as a main pillar of overall economic reforms has faced several significant breakthroughs during the last three decades. The development of China's tax system has gone through three major stages since the founding of the Republic of China in 1949.

The first stage is from the early establishment of the Republic of China to opening-up and reforms (1949 to 1978), during which period China's tax system experienced a bumpy road due to the political and economic conditions at that time. Especially during 1957 to 1978, because of erroneous 'Left' policies and the impact of the former Soviet Union's economic theory and fiscal system, the construction of China's tax system suffered a serious disruption. The tax reform was characterized by unbalanced simplification. As a result, many tax organizations were merged into other organizations, and a large number of tax staff were compelled to change their jobs thereby, weakening the role of taxation in the economy and hindering the performance of the function of taxation.

The second stage is from the opening-up and reforms in 1978 to 1993, during which time China focused on the establishment and consolidation of the new China tax system. Also from this period, China's financial and tax departments studied the tax reform in China with a view to establish a modern tax system appropriate to the early economic conditions of the Chinese economic system under reform. Specifically, in 1984, the practice of "substitution of tax payment for profit delivery" (*ligaishui*) on state-owned enterprises was implemented, which established a strong relationship between the State and the enterprises within the taxation system. Up to then, state-owned enterprises started to pay income tax instead of turning over all profits to the State.

From 1994, China started its third stage of tax system reforms, during which time the tax system was comprehensively deepened. Especially, two major reforms of corporate income tax were implemented in 1994 and 2008. At the end of 1993, China's State Council enacted the *Regulation on the Implementation of the Enterprise Income Tax Law of China*, which became effective on January 1, 1994. The scale and scope of the 1994's tax reform was the largest and most comprehensive since the Republic of China was

founded. The Regulation set the corporate statutory tax rate at 33%; at the same time, favorable tax incentives were provided in different regions and for specific industries. At that time, the state introduced the policy of first levying and then rebating taxes (FLTRT) for their local governments to attract capital investment. Corporate taxes in China were classified as central revenue and local revenue, collected by the National Taxation Bureau (*guoshuiju*) and Local Taxation Bureau (*dishuiju*), respectively. However, this policy brought about competition between local governments. To prevent this, the central government issued a formal ruling to prohibit local governments from providing local tax rebates. This took effect on January 1, 2002, together with requiring local governments to surrender 50% of the income tax revenue collected from local enterprises in 2001. Later in 2003, the proportion of corporate income tax shared by the central government increased from 50% to 60%[1].

The second major reform of corporate income tax was the 2008's tax reform. On March 16, 2007, the fifth Session of the tenth National People's Congress (NPC) approved the new Corporate Income Tax Law, which took effect on January 1, 2008. The new income tax law set a unified statutory tax rate of 25% for both domestic and foreign companies, and changed the current tax holiday, preferential tax treatments and transitional provisions. Under the previous tax law, domestic companies were assessed at a 33% statutory income tax rate; while certain foreign companies enjoyed preferential tax rates of 24% to 15%.

Through the above described series of reforms, China's tax system has been improved and has become more standardized, which has led to a significant growth of national tax

[1] The sharing of corporate income taxes: except for the part belonging to the central government as ruled, 60% and 40% of the rest is shared by the central government and the local government, respectively. See more details from "Tax System of The People's Republic of China" by Liu (2014).

revenue. It has provided a solid foundation for China's economic reforms.

1.3. Motivation of Study

Corporate taxes represent one of the most substantial costs to a company resulting in a reduction in its distributable cash flows, so that reducing taxes is a powerful motivational strategy in corporate operations. And it motives shareholders to reduce their tax burden by means of tax management activities.

Corporate tax management may imply either managerial value-maximizing behavior or a greater potential for agency conflicts between managers and shareholders. Since corporate opacity could be exploited by opportunistic managers to extract private benefits at shareholders' expenses, investigating the impact of tax management can help investors understand the degree of coupling between tax management and rent extraction (Desai & Dharmapala, 2006).

At present, there are limited systematic studies on the consequences of corporate tax management in China as existing studies do not provide much guidance. Compared with research on developed markets, especially the U.S, studies of corporate tax management in emerging markets in general and China in particular are very limited. However, Chinese enterprises tend to show a concentrated ownership structure, limited information disclosure, highly politicized institutional arrangements, and incomplete legislation on investor protection (Svensson, 2005). These leakages and imperfections offer more opportunities to facilitate enterprises to engage in different kinds of corporate tax management to reduce their tax burden. But in the context of widespread tax management in Chinese enterprises, it may not be accompanied by a simultaneously beneficial consequence to enterprises. Hence, this thesis attempts to provide a robust and systematic

understanding of the economic consequences of corporate tax management in China.

Moreover, the reforms of state-owned enterprises took place stage by stage, revealing a process of corporatization and privatization in order to raise funds for expansion and to increase revenue. Those reforms have shaped "Chinese-style privatization". This thesis takes the enterprise reform phased phenomenon of profit-oriented listed state-owned enterprises into consideration, which is a special kind of enterprises with China characters. The enterprise reform facilitates enterprises to pursue profits, which changed the traditional view of state enterprises with lower efficiency. However, partial privatization of wholly state-owned enterprises may carry institutional problems. Control rights are transferred to managers, which offer them opportunities to pursue self-interests, such as stealing state assets, thereby causing agency costs and increased risks. Thus, state ownership need also to be taken into account in this study.

Most empirical literature on tax management in China focus on how firms' internal characteristics, such as firm size, ownership and leverage, affect corporate tax management and its outcomes (Adhikari, Derashid, & Zhang, 2006; Badertscher, Katz, & Rego, 2013; Wu, Wang, Luo, & Gillis, 2012), while ignoring the special macro-environment determinants specific to China. As the largest transition economy, China has gone through a gradual transition from a central-planned economy to a market-oriented economy and to achieve rapid GDP growth, which makes research in this market intriguing. Therefore, when we examine the determinants of corporate tax management, we should look beyond firm-level determinants to also take into account macro-level characteristics. A more comprehensive set of macro-factors of corporate tax management need to be considered. Therefore, the above discussion provides the motivation for this thesis to try to examine the consequences of corporate tax management taking account of the special features of China's economy.

1.4. Problem Statement

As mentioned above, from a traditional view of corporate tax management, it is regarded as an approach of corporate tax saving, which involves profits being transferred from government to shareholders thereby resulting in higher firm value. However, under modern corporations (especially listed corporations), one of the most marked characteristic is the separation of ownership and management, which gives shareholders and managers a different time horizon. Managers as direct operators, can always know the information earlier and better than shareholders, leading to a situation of asymmetric information. Thus, manager's behaviors and decisions can directly influence corporate performance. Therefore, managerial rent extraction can consist of tax management activities (Mihir A. Desai & Dhammika Dharmapala, 2009; Kim, Li, & Zhang, 2011; Zhang, Cheong, & Rajah, 2016), which may lead to uncertain outcomes.

On the plus side, if tax management activities indeed benefit enterprises through reducing corporate taxes accompanied by increasing a firm's cash flow, how the increased cash flow acts are used to raise firm value is a question that needs to be examined.

On the negative side, tax management can facilitate rent extraction behavior, increasing the costs of tax management and harming firm wealth. More specifically, managers also face short-term incentives, such as their employment contract, remuneration, and career concerns, which would motivate them to conceal negative operating performance. At this time, the complex and obscure nature of tax management practices provides a mask to help managers hide bad news and financial information from shareholders and the public. But in time the accumulated negative news would leave a huge future moral hazard. When such news reaches a certain level, it would suddenly be released to the market, which could cause extreme consequences, such as firms' stock

price crash (Kim, Li, & Zhang, 2011; Li, Luo, Wang, & Foo, 2016). Hence, the outcomes of tax management as a function of time, and how they change over time are well worth exploring.

Modern Chinese listed state-owned enterprises are a product of reform of former state-owned enterprises, which have become partially privatized though they are still government controlled. The reform has transformed them to become more profit-oriented with modern corporate governance structures in place, and more profitable and efficient. At the same time, the reform also gives them more autonomy than before, which can cause conflicts of interests between the top executives (bureaucratic agency officials) and shareholders. The autonomy enjoyed by the executives motivates them to maximize their personal interests, such as political career or/and compensation, even if it may increase potential risk. However, the government as ultimate controlling shareholder of listed SOEs also may act to offer them the "helping hand", when they meet serious crisis. Hence, it is interesting to explore the role of government ownership when a crisis comes.

China's economy has achieved significant growth and improvement during the past three decades, and is well on the way towards marketization. However, China is still a developing country undergoing economic and social transformation. It is still characterized by imperfect legal regimes, coupled with strong government intervention (Chen, 2015; Tu, Lin, & Liu, 2013). That is why with rapid economic growth, corruption in China is believed to be growing. Corruption, therefore, has become one of the biggest hidden dangers affecting China's economic activities. Hence, research is needed to investigate how market development and corruption influence firms' activities. How tax management and corruption are linked is another question to be explored.

1.5. Research Questions and Objectives

Based on the research problems discussed above, this thesis seeks answers to the following three main research questions.

Research Question 1: What is the relationship between corporate tax management and firm performance in China's listed enterprises, and how does the after-tax cash arising from tax management benefit firms' market value? (Chapter 3）

Research Question 2: What are the extreme market outcomes of corporate tax management in China's listed enterprises, and how does government ownership influence these extreme outcomes? (Chapter 4)

Research Question 3: How does corruption and marketization impact corporate tax management in China's listed enterprises, and how does corruption interact corporate tax management, which in turn impacts firm performance? (Chapter 5)

The following research objectives are framed to answer the above research questions.

Objective 1: To examine the relationship between tax management and firm performance through firm's profitability, growth and market value, and to explore their interaction.

Objective 2: To investigate the relationship between tax management and stock price crash risk in the current year and over the future, and to examine the moderating role of government ownership on this relationship.

Objective 3: To examine the impact of corruption on corporate tax management, and to test the moderating role of marketization on this relationship. An additional and related objective is to investigate the moderating role of corruption on the relationship between tax management and firm performance.

1.6. Corporate Tax Management: Concept and Definition

Hanlon and Heitzman (2010, p. 137) state that "if tax avoidance represents a continuum of tax planning strategies where something like municipal bond investments are at one end (lower explicit tax, perfectly legal), then terms such as ''noncompliance,'' ''evasion,'' "aggressiveness,'' and ''sheltering'' would be closer to the other end of the continuum." Following Hanlon and Heitzman (2010), corporate tax management is defined broadly as any transaction that can reduce a firm's explicit income taxes liabilities, resulting in a lower corporate effective income tax rate (ETR). This thesis covers tax management that is fully legal, and/or those that occupy a grey area, and may also include those that are illegal.[2]

To minimize semantic confusion, the term ''tax management'' is used throughout the thesis, while the following terms may also be used interchangeably, for example, "tax avoidance", "tax aggressiveness", or "tax sheltering".

1.7. Organization of Thesis

This thesis is structured as follows. In Chapter 2, theoretical and empirical literature related to corporate tax management is reviewed. Based on the literature review, the

[2] There are at least two reasons that made this thesis did not distinguish between technically legal tax planning and illegal aggressive tax evasion. First, most of the behavior in question surrounds transactions that are often technically legal. Second, the legality of a tax management transaction is normally determined after the fact. Therefore, those avoidance activities may include both certain tax positions and uncertain tax positions that may or may not be challenged and determined illegal.

chapter will discuss the research gaps and opportunities. Chapter 2 introduces the theoretical and analytical framework of this thesis. At the end, a brief introduction of the research methodology is provided.

Chapters 3, 4, and 5 are the three analytical chapters, which show the empirical results and answer the three research questions of this thesis. Chapter 3 examines the relationship between tax management and firm performance via firms' profitability, growth, and market value; and subsequently, explains how the additional after-tax cash arising from tax management would help expand firms' market value.

Chapter 4 focuses on the extreme market outcomes of corporate tax management. Chinese enterprises have experienced a series of reforms, but state shares still account for the largest part of shares of listed enterprises in China. Chapter 4 investigates the moderating role of different levels of government ownership (central-, provincial-, and municipal- listed SOEs) on the extreme outcomes.

Chapter 5 explores the relationship between the macro determinants of corruption and marketization on corporate tax management in Chinese listed enterprises. It then discusses how corruption impacts corporate tax management and the relationship between tax management and firm performance.

Chapter 6 presents the conclusions of this thesis. The chapter also discusses the scientific contribution of this thesis to the body of knowledge. It draws implications for theory, policy and practice. Finally, the chapter ends up with recommendations for future studies.

CHAPTER 2: LITERATURE REVIEW AND METHODOLOGY

2.1. Introduction

This chapter reviews the existing debates on corporate tax management. There are eight sections in this chapter: Section 2.2 discusses the related key theories in this thesis, which are agency theory, bad news hoarding theory, helping and grabbing hand hypotheses. Section 2.3 reviews prior empirical studies of corporate tax management under the modern corporations, and presents three specific features of China's market, which are government ownership, corruption, and marketization. Based on the above review, Section 2.4 discusses the research gaps and opportunities provided by the previous research. Then, Section 2.5 and 2.6 introduce the theoretical and analytical frameworks of this study. Section 2.7 provides a brief introduction of research methodology. Finally, Section 2.8 concludes the chapter.

2.2. Theoretical Underpinnings

Various firm theories have been formulated in explaining the different behaviors of modern listed enterprises. Agency theory has been widely applied to explain the complex control problems in modern enterprises. In this section, the study firstly has a brief review of agency theory under the modern corporation system, which reflects the beneficial conflicts between agents and principals. Then, corporate tax management under such agent conflict environment will be discussed. Secondly, consistent with agency theory, the study describes another theory related to tax management, the bad news hoarding theory which suggests an undesirable market outcomes of tax management. Since governments play an important role in China's economic market, the study will further

review two opposite hypotheses related to governments, which are “helping hand” and “grabbing hand”, to help to understand how governments and enterprises interact in a transition economy.

2.2.1. Agency Theory

In the theory of the firm, “the firm is a ‘black box’ operated so as to meet the relevant marginal conditions with respect to inputs and outputs, thereby maximizing profits, or more accurately, present value” (Jensen & Meckling, 1976, pp. 306-307). Thus, the fundamental principle of the firms is maximizing behavior or more specific profit maximization. Yet, it had ignored the conflicts between individual participants. Jensen and Meckling (1976) put forward the agency theory, employing the metaphor of a contract to describe the agency relationship of the separation between the principal and the agent. Meanwhile, the principal engages the agent to perform some work on its behalf, and at the same time, delegates some authority of corporate decision-making to the agent (Eisenhardt, 1989; Jensen & Meckling, 1976). However, individuals have always been characterized as rational and self-interested pursuing value-oriented activities (Scott, 2000). If both parties of principal and agent are utility maximizers, a conflict of interests between them will exist. It cannot guarantee that the agent will operate in the best interests of the principal, which may harm the wealth of principal. Accordingly, agency costs are generated. Jensen and Meckling (1976) define the agency costs as the sum of expenditures of monitoring by the principal and bonding by the agent, and the “residual loss” representing the reduction of principal’s interests due to the divergence between the principal and agent.

Table 2.1: Agency Theory Overview

Key idea	Principal-agent relationships should reflect efficient organization of information and risk-bearing costs
Unit of analysis	Contract between principal and agent
Human assumptions	Self-interest; Bounded rationality; Risk aversion
Organizational assumptions	Partial goal conflict among participants; Efficiency as the effectiveness criterion; Information asymmetry between principal and agent
Information assumption	Information as a purchasable commodity
Contracting problems	Agency (moral hazard and adverse selection); Risk sharing
Problem domain	Relationships in which the principal and agent have partly differing goals and risk preferences (e.g., compensation, regulation, leadership, impression management, whistle-blowing, vertical integration, transfer pricing)
Source from: *Agency Theory: An Assessment and Review* by Eisenhardt (1989, p. 59)	

2.2.1.1. Agency View of Corporate Tax Management

The classic research of Allingham and Sandmo (1972) contributes to theoretical and empirical analysis on individual tax management. For individuals, the motivations of tax management is determined by both extrinsic motivation (the probability of detection and punishment, the penalty structure, and the risk aversion of the potential evader) (Allingham & Sandmo, 1972) and intrinsic motivation (civic virtue, and duty). Then, Slemrod (2004) argues that it also applies to closely-held small business without well-diversified owners' wealth. In this case, the tax situation of a firm and the tax situation of the owners are closely related. But Slemrod (2004) also points out the differences between individual and large, especially public listed enterprises, stressing that the feature of the separation between ownership and control should be taken into consideration. The

following studies of Chen and Chu (2005) and Crocker and Slemrod (2005) further support that corporate tax management should be analyzed in the framework of principal-agent problems.

Under the separation of ownership and control, there are two alternative perspectives of corporate tax management. From one side, corporate tax management can be viewed as a worthwhile activity, as managers act on behalf of owners to reduce firms' costs to achieve profit maximization. In this case, managers engaging in corporate tax management to reduce tax burden is a value enhancement activity. This relies upon corporate owners structuring appropriate incentives to ensure managers make tax-efficient decisions. By being corporate tax efficient, the marginal benefits of the tax avoiding transaction exceed the marginal costs (Hanlon & Heitzman, 2010). Phillips (2003) finds that compensating business-unit managers on an after-tax basis will reduce corporate effective tax rates.

The following studies have introduced the agency costs into corporate tax management, known as agency perspective on corporate tax management. Desai and Dharmapala (2006) investigate the relationship between tax sheltering and corporate governance. They argue that the complexity and obfuscation of the tax sheltering activities would cause information asymmetry between managers and shareholders, providing opportunities to managers engaging in self-interests enhancement. Moreover, such complicated tax sheltering would also facilitate managerial opportunism and resource diversion (Mihir A Desai & Dhammika Dharmapala, 2009), which would further harm shareholders' wealth. Simply put, corporate tax management can be viewed as a complement of managerial diversion. Thus, given the potential role of agency costs, the consequences of corporate tax management are inconclusive.

2.2.2. Bad News Hoarding Theory

In practice, the market always suffers opaqueness and imperfect protection of property rights. Thus, how the limited information and poor protection of investors affect the risk bearing between inside managers and outside investors has drawn wide attention among researchers in recent years.

Consistent with the nature of agency problems, Jin and Myers (2006) develop bad news hoarding theory by employing a theoretical model with country-average data. When firms are in a non-transparent market, the outside investors (outsiders) can obtain market-wide information but limited firm-specific information, while the inside managers (insiders) as the party who manage day-to-day operations, can capture more firms' cash flow and firm-specific information. Because of the conflicting interests between insiders and outsiders, the information asymmetry between the two parties motivates managers to pursue their self-interests and sacrifice shareholders' interests. Thus, this would facilitate insiders to strenuously conceal firms' bad news and show a perfect performance. Prior literature finds that both financial and non-financial incentives motivate managers to withhold bad news. Basu (1997) claims that if managerial compensation is correlated with reported earnings, managers will have higher motivation to conceal any adverse information. Kothari, Shu, and Wysocki (2009) and Ball (2009) find that the incentive of achieving self-benefits, such as career concerns and empire building, facilitates managers to hide negative information in the firm and overstate financial performance.

In an environment of information opaqueness, with the hidden bad news accumulating, the external market will overvalue the firms' stock price. While, the amount of bad news that can be hidden by managers is limited, when the accumulated news reaches a certain threshold, all the bad news will be released to the market at once. This will cause an

onslaught on firms' stock price resulting in a stock price crash (Hutton, Marcus, & Tehranian, 2009; Jin & Myers, 2006). Bleck and Liu (2007) further find that managers always potentially hide news of firms' poor financial performance, which hinders shareholders' and investors' ability to distinguish bad projects from good at an early stage, resulting in asset price crashes.

Therefore, Kim, Li, and Zhang (2011) argue that the complex and opaque nature of corporate tax management can be employed by managers as a tool or mask to manipulate earnings and hide bad news, which may increase the probability of future stock price crashes. Therefore, under the theories of agency cost and bad news hoarding, corporate tax management can lead to potential market risks to enterprises.

2.2.3. Helping Hand and Grabbing Hand Hypotheses

For a country experiencing economic transformation, the government plays an important role, intervening in economic activities. There are two alternative hypotheses to explain the interactions between bureaucrats and entrepreneurs in the transition economy. These are the "helping hand" hypothesis and the "grabbing hand" hypothesis.

Under the helping hand perspective (see Frye and Shleifer (1997)), bureaucrats can gain self-interests through promoting local business, such as providing help to some firms especially for those with political connection (Cheung, Rau, & Stouraitis, 2008). In this case, the legal system plays a limited role. Corruption is a pervasive behavior, but it is relatively limited and organized. Bribe becomes an efficient approach to help firms gain the helping hand from government; firms paying a bribe can bypass dysfunctional regulation and obtain more preferential treatment. Prior empirical studies also find that if a firm operates in a less developed governance and weak regulation environment, a

bribing mechanism can facilitate economic transactions (Jiang & Nie, 2014; Petrou & Thanos, 2014).

On the other side, government may also play a role of "grabbing hand" in economic activities. In this scenario, government is more like an interventionist, which exhibits disorganized feature (Frye & Shleifer, 1997). The government loses its ability to provide legal protections to firms. Moreover, such government has a huge number of self-interested bureaucrats expropriating wealth from firms to improve personal interests (Shleifer & Vishny, 1993). In this case, corruption acts as a "grabbing hand", which creates huge costs for economic activities and distorts resource allocation, destroying economic development (Jiang & Nie, 2014; Mauro, 1995; Petrou & Thanos, 2014). As a consequence, firms have to shoulder more costs and suffer heavy uncertainties.

Frye and Shleifer (1997) point out that the above situations are "ideal types", which may not run independently. In reality, with unbalanced market development in different regions in China, the extend of government intervention and marketization may vary considerably across regions, which provides an opportunity to explore the both views.

Table 2.2: Economic Role of the State During Transition

Model	Legal environment	Regulatory environment
Helping hand	Government is above law but uses power to help business. State officials enforce contracts.	Government aggressively regulates to promote some businesses. Organized corruption.
Grabbing hand	Government is above law and uses power to extract rents. The legal system does not work.	Predatory regulations. Disorganized corruption.
Source from: *The Invisible Hand and the Grabbing Hand* by Frye and Shleifer (1997, p. 355)		

2.3. Empirical Studies

2.3.1. Motivations Underlying Corporate Tax Management

Corporate tax management is becoming an universal economic phenomenon, arousing broad attention and research into the motivations of such management activities (Hanlon & Heitzman, 2010). From a traditional perspective, tax management is viewed as a financial strategy transferring profits from government to shareholders (Mihir A. Desai & Dhammika Dharmapala, 2009). Thus, the original motivation of firms pursuing tax management is to reduce corporate tax burdens and increase after-tax cash flow (Scholes, Wolfson, Erickson, Hanlon, Maydew, & Shevlin, 2015), which is beneficial to their bottom line by lowering the costs.

However, as discussed aforementioned, under an agency view of corporate tax management, such obfuscatory tax management activities can shelter managers acting in various forms of self-interests activities by managerial rent extraction, such as earnings manipulation and insider transactions (Desai & Dharmapala, 2006). Managers can disguise complex tax avoiding transactions under the ostensible objective of reducing firms' tax obligations to conduct managerial opportunism and resource diversion (Desai & Dharmapala, 2006; Mihir A. Desai & Dhammika Dharmapala, 2009). Badertscher et al., (2013) support the idea that managers can use tax management to engage in shirking and rent extraction activities, which improve their self-interests. Thus, under the conflict of interests between shareholders and managers, corporate tax management becomes an useful instrument of managers to pursue self-interests, which would less benefit or harm the interests of shareholders (Mihir A. Desai & Dhammika Dharmapala, 2009; Desai, Dyck, & Zingales, 2007).

Furthermore, many studies reveal that due to incomplete and asymmetric information (Fama, 1980; Healy & Palepu, 2001; Scherer, 1988), "corporate myopia" has becoming a pervasive and severe phenomenon on the modern corporations (Chemmanur & Ravid, 1999; Holden & Lundstrum, 2009; Lundstrum, 2002; Nyman, 2005). On one side, managers who control day-to-day operations have more private information about their firms, which encourage them to pursue short-term profits rather than firms' long-term performance (Grant, King, & Polak, 1996). And top executives may set a "tone at the top" stressing short-term cost minimization and profit maximization. On the other side, shareholders, especially institutional investors of public listed enterprises are more like share traders shifting their focus towards a short time horizon, such as quarterly, half yearly, or annual profit, engaging in short-termism behaviors[3]. Graves and Waddock (1990) argue that institutional ownership taking an active role in a firm's strategic decision-making has limited knowledge of the firms, resulting in non-neutral decision and preference for short-term gains. Asker et al., (2014) argue that managers especially in listed enterprises tend to prefer short-term profits over long-term success because of pressure on short-term financial results. Ultimately, managers have to bear more pressure from such short-sighted shareholders to improve short-term performance.

In the perspectives of "corporate myopia" and "short-termism", it gives incentives to managers employing corporate tax management as a tool to engage in short-term actions. Unlike reducing operating costs, tax saving does not cause direct adverse consequences on a firm's daily operation (Edwards, Schwab, & Shevlin, 2013; Koester, Shevlin, & Wangerin, 2016). More importantly, corporate tax management offers opportunities to managers and short-sighted investors for earnings manipulation and cover up corporate

[3] Based on the report from ACCA "Myopic management". Retrieved from http://www.accaglobal.com/za/en/student/exam-support-resources/fundamentals-exams-study-resources/f9/technical-articles/myopic-management--causes-and-remedies.html

real operating performance to boost short-term stock price.

2.3.2. Consequences of Corporate Tax Management

Taxation as a significant cost affects corporate decision-making behaviors and the bottom-line performance. Reducing corporate taxes has become a powerful motivational force in a corporate life. While corporate tax management may have various impacts on the interests of various stakeholders, this thesis lays a strong emphasis on the shareholders' wealth effects of tax management. Shareholders can encourage managers to reduce corporate tax liabilities increasing their benefits through designing effective compensation incentives (Mihir A. Desai & Dhammika Dharmapala, 2009). But complex tax avoidance activities would cause internal control system opaqueness, increasing information asymmetry between shareholders and managers (Lee, Dobiyanski, & Minton, 2015). Information asymmetry can offer opportunities to managers pursuing personal gains, while shareholders are hardly able to observe the real outcomes of tax management. Hence, the consequences of corporate tax management are no longer entirely clear.

From a theoretical perspective, corporate tax management represents potential value-enhancement activities conducive to achieving shareholders' wealth maximization (Mihir A. Desai & Dhammika Dharmapala, 2009; Mironov, 2013). But in the agency perspective of corporate tax management, the impact of corporate tax management on firm value can be extensive. Desai and Dharmapala (2006) find that although there are obvious gains in after-tax cash flow, shareholders still may not want managers to work for many tax sheltering activities, because such sheltering can create managerial rent diversion, which may not necessarily increase shareholders' value.

To strengthen the above results, Wilson (2009) examines the stock return performance of tax shelter for the periods before, during, and immediately after sheltering activities. He finds that firms with good governance would have significantly higher abnormal returns, which is consistent with corporate tax sheltering creating shareholders' wealth for well-governed firms. In addition, Mihir A. Desai and Dhammika Dharmapala (2009) find a positive but insignificant relationship between tax avoidance and firm value, but a positive relationship for firms with dominant institutional ownership. They argue that tax management per se should benefit corporate after-tax cash flow, but this impact would be potentially offset by a poor corporate governance mechanism. Moreover, the findings of Mironov (2013) support the view that managerial diversion can be concealed in the process of tax management, which hurts firm performance. Using a sample from China's listed enterprises, Chen, Hu, Wang, and Tang (2014) find that corporate tax avoidance is inversely related to firm value and causes increase of agency costs, but this relation can be attenuated by information transparency. Thus, due to tax management fostering agency problems, if shareholders cannot fully understand the cost-benefit calculus, tax management activities could discount the value of firms.

Beyond the unclear firm-level outcomes of corporate tax management, recently many high-profile corporate accounting scandals, such as Enron and Apple, were revealed and managers were accused of using complex tax management to pursue personal interests, causing stock price volatility (Hanlon & Slemrod, 2009; Kim, Li, & Zhang, 2011; Rego & Wilson, 2012). Thus, an increasing number of studies start to investigate the market reactions to corporate tax management activities.

In the study of Swenson (1999), corporate income taxes as a cost lower bottom-line profits, so that the stock market perceives low-tax paying firms as being better at controlling costs and more profitable firms. Similarly, Wang, Wang, and Gong (2009) find

that there is a positive market reaction in China to companies which succeeded in reducing tax liabilities. However, Desai and Hines (2002) examine the consequences of firms' inversion announcements, and find that market does not react positively to ostensibly tax-saving moves, and often responds negatively. Hanlon and Slemrod (2009) further support the argument that there is a negative reaction of stock market to news about firms involved in aggressive tax avoidance, which may lead to a stock prices decrease. At last, they point out that the market can react positively to firms' tax saving activities, on the condition that such avoiding activities are not aggressive. Kim, Li, and Zhang (2011) examine the relationship between tax avoidance and future stock price crash risk using the data from U.S. market. They find that the complex and opaque nature of tax avoidance can be used to hide adverse news to mislead investors for an extended period, which may lead to a high likelihood of future stock price crashes. The following study of Li, Luo, Wang, and Foo (2016) find the similar answer that tax sheltering behaviors positively correlated with future stock price crashes based in China's listed enterprises. But they supplement that the positive relationship can be mitigated by market development and external monitoring mechanisms, while strengthened by information opacity. Hence, the aggressive tax management can be considered as a risk-engendering corporate financial activity.

In sum, the prior studies show that the consequences of corporate tax management are significant variations. Their opposite arguments provide evidences challenging the traditional perspective of tax management, which is a value enhancement activity benefiting corporate shareholders. Under the agency perspective of tax management, opportunistic managers can use tax management as a tool to extract rents, which harms firms' profits and leads to extremely market returns.

2.3.3. Specific Characteristics Relevance to China's Enterprises

China is changing from a central planned system to a market-oriented economy, achieving a notable economic growth during the last three decades. Paradoxically, the market shows an obvious characteristic of relationship-based (*guanxi*) rather than rule-based, with excessive government interventions coupled with weak legal system (Chen, 2015). For example, Allen, Qian, and Qian (2005) state that China represents an significant counterexample to the uneven development of law, finance, and economic growth, which is the economic miracle with arguably poor legal protection and financial mechanisms. Piotroski and Wong (2012) further find that China's financial market and listed firms are operating in an environment of poor information and highly politicized institutional arrangements. The relationship-oriented contracting and social connections attenuate the information quality and the protection of property rights. As a result, China is ranked among the least transparent economies, where many loopholes in legislation exist. Hence, it provides numerous opportunities to managers engaging in managerial opportunism in response to such loopholes.

Given the unique nature of economic, political and institutional environment in China, the incentives and consequences of corporate tax management may differ greatly from those in developed countries. Thus, to capture the impact of such different macro environment, this study takes three distinctive features into consideration, which are government ownership, corruption, and market development.

2.3.3.1. State Ownership

Given the important role played by state controlled/owned enterprises (SOEs) in China's economy, it is essential to explore the impact of state ownership on the

consequences of corporate tax management. Intuitively, SOEs' managers mostly are appointed by government (ultimate controlling shareholders) to act on behalf of the government in corporate decision-making. They shoulder more social and political responsibilities, such as employments and social security (Jensen & Meckling, 1976; Ross, 1973; Xu, Zhu, & Lin, 2005). Compared with managers in private enterprises, SOEs' managers have more incentives to seek future political advancement. The higher level of political hierarchy will garner more privileges even after they leave their position (Tu, Lin, & Liu, 2013). Since tax is one of the main sources of fiscal revenues, the amount of tax paid by SOEs is employed as a key factor to evaluate the performance of SOEs' managers. Hence, the managers have strong incentives to pay more taxes to achieve social objectives, which may help them to get greater chances of political promotions (Lin, Lu, & Zhang, 2012). Under the above assumption, SOEs would be less likely to avoid taxes, which is called bureaucratic incentive effect (Jian, Li, & Zhang, 2013).

However, the reforms of state-owned enterprises have significantly enhanced the efficiency of the managerial labor market, established performance-based bonus policy giving the incentives of SOEs' managers to perform an outstanding performance. *The Performance Evaluation Guideline for State-Owned Enterprises*, published by Chinese government in 2002 and 2006, explicitly states that firms' economic performance is one of the key evaluation factors. Therefore, SOEs' managers have incentives to pursue a self-serving agenda (for political career advancement and higher compensation) by using tax management to conceal adverse operating outcomes and dress up their performance.

Jian, Li, and Zhang (2013) claims that SOEs may have more incentives to engage in tax management, because of their direct connection with governments. Government ownership can help SOEs gain a "helping hand" from the government through tax incentives, at the same time, reducing the likelihood of tax audits, and even avoiding or

limiting being punished in the event of tax evasion (Jian, Li, & Zhang, 2013; Li, Wang, Wu, & Xiao, 2016; Wu, Wang, Luo, & Gillis, 2012). Simply put, managers of SOEs have more opportunities to take advantages of the preferential treatment from the government to avoid taxes for personal interests. In addition, Tang and Firth (2011) argue that listed local state-owned/controlled enterprises (including provincial level and municipal level listed SOEs) have more incentives to seek earnings and tax management. This is because local governments as the largest shareholders are the largest beneficiaries of high after-tax profits. In addition, the tax-sharing policy in China requires local governments to share the income tax paid by the local SOEs with central government. Hence, local governments have strong incentives to encourage local SOEs to boost earnings.

As above discussion shows, managers of SOEs have more space and motivation to use their political connection to pursue self-interests agenda, such as a political career, compensation contract. But in the meanwhile, such behaviors may cause potential risk. Thus, a question is raised as to whether governments as ultimate controlling shareholders of SOEs will protect them when they meet crisis. In addition, are there any different impacts among firms controlled by different government administrative ranks is another question to ask.

2.3.3.2. Corruption

Officials and businessmen are rational people with self-serving characteristics. Generally, officials' bribe-taking or enterprises' bribery will be conducted when they believe that their benefits exceed the costs and penalty in the process of corruption.

China represents a worthy study for the topic of corruption because of its specific cultural characteristics in social and business behaviors. China has undergone dramatic reforms of economy and market, but the market still has its noteworthy characteristics of relationship-oriented (also known as "*guanxi*") rather than rule-based applied widely in the western countries (Martinsons, 2005). This causes the paradoxical phenomenon of rapid economic growth with a rising corruption in China (Wedeman, 2012). Corruption in China is deemed as a "normal" behavior (Jain, 2001), or even been viewed as "*qianguize*" ("hidden rules of the game"), which existed in social, political, and economic activities (Faure & Fang, 2008). Recent research also demonstrates that corruption in China is more "intensified" and "institutionalized" (Jianming & Zhizhou, 2008; Wederman, 2004), growing in sophistication and complexity, relating to greater economic interaction (Gong, 2002).

Besides the above cultural traditions in China, research also attributes corruption to the incompleteness of China's economic reforms (Oi, 1989). During China's fiscal decentralization reform, the central government has granted more autonomy and authority to local governments, giving local officials more discretionary power. Thus, the increased discretionary power simultaneously provides more opportunities for local officials to pursue bribe-seeking (Ngo, 2008). Under a high rate of government intervention, Ngo (2008) finds that firms are more prone to bribe their local government officials for extra preferential policies and economic advantage, including direct subsidy such as tax benefits, tax break or tax reduction, and grants. Manion (1996) examines the corruption in Chinese enterprise licensing system, and finds that problematic institutional design, bureaucratic discretion, and ambiguity of government regulations, have enabled officials to bribe in the process of licensing.

In recent years, scholars have begun to consider the impact of corruption, while the results are contested shown two opposite views. From a traditional view of corruption, it acts as a "grabbing hand", representing a significant cost for economic activities that may distort resource allocation, which results in a negatively effects on growth and development of economic activities (Jiang & Nie, 2014; Mauro, 1995; Petrou & Thanos, 2014). On the other hand, some studies support the hypothesis of "helping hand" or "grease the wheels", in which they argued that if a country suffers poor governance, ill-functioning institutions, and heavy regulation, a bribing mechanism can help circumvent such inefficiency and facilitate economic activities (Egger & Winner, 2005; Jiang & Nie, 2014; Sharma & Mitra, 2015). In this scenario, the margin benefits of corruption are higher than its margin costs. The above opposite views suggest that the effect of corruption on economic activities may be more complicated.

In the context of a transition economy, whether corruption is harmful is becoming an interesting and important empirical question. Presently, a large number of studies of the impact of corruption have been done in macro literature, such as economic development and FDI (Barassi & Zhou, 2012; Gunter, 2017; Petrou & Thanos, 2014; Saha & Ben Ali, 2017). However, at firm level, only few studies have addressed this issue, especially in the case of transition countries. China as the largest transition economy serves as an important case. To the incomplete market mechanism in China, we cannot simply put corruption into a black or white box. Moreover, corruption plays a complicated role that would influence interests of different parties, both at the micro-level and macro-level. Thus, this study will examine the impact of corruption on corporate tax management and its impact on the link of tax management – firm performance as a starting point to explore the deep-rooted incentives behind the corruption.

2.3.3.3. Marketization

From a typical view, institutional variation exists across countries with many in-depth cross-country comparative analysis (Chen, Zhai, Wang, & Zhong, 2015). But those studies assume that institutional environments are similar across different regions within a country, in other words, they assume institutional homogeneity within a country (Aguilera, 2005). However, recent studies find that the institutional environment is heterogenous across different locations within a country, especially in a transition economy (Chen, Zhai, Wang, & Zhong, 2015; Hong, Wang, & Kafouros, 2015; Ma, Tong, & Fitza, 2013).

Since China implemented economic reforms and the open-door policy in the last three decades, some notable changes of institutional environment have taken place. More specifically, China is conducting the changing of structure from a central-planned system to a market-oriented economy, showing a disparity in regional marketization (Hong, Wang, & Kafouros, 2015; Su & Wan, 2014; Wei, Wu, Li, & Chen, 2011). A survey by Fan, Wang, and Zhu (2007) find that due to the factors of different regional histories, nature environment, regional development, and social culture, there are significant variations of regional institutional environment, such as an uneven pace of regional market development.

In a higher degree of marketization region, the market function is more efficient, the legal protection mechanism is relatively robust, government interventions and interruptions are less, and information asymmetry is reduced (Chen, Zhai, Wang, & Zhong, 2015). In a lower degree of marketization region, the role of government interference is more influential, facilitating grabbing behaviors by the government, especially among the lower administrative government officials (Hong, Wang, &

Kafouros, 2015; Su & Wan, 2014). The degree of marketization as an inherent external governance mechanism (Wei, Wu, Li, & Chen, 2011), would impact macroeconomic development and corporate behaviors directly and indirectly.

Although Chapter 3 to Chapter 5 contains literature on the above topics, the chapter reviews relate to study more specific to the themes of the chapters.

2.4. Research Gaps

Based on the above review of related theories and past empirical studies, there are some research gaps, which provide opportunities to examine the different consequences of corporate tax management in the context of China.

Firstly, most prior studies are based on the samples from cross-country or developed countries, which may fail to control for the systematic differences among economies at different stages of development. This may impede the researchers to explore the potential real outcomes of corporate tax management in developing countries, and to make meaningful inferences. Therefore, this study focuses on intra-country information choosing the China's market as the target sample, which can avoid the above problem.

Secondly, prior studies that examined the economic consequences of tax management have shown mixed results. On the one stream, corporate tax management is viewed as a corporate financial strategy that is potentially value-enhancing. Nevertheless, how does tax management achieve value enhancement remained largely unexplored. On the other stream, corporate tax management is viewed as a tool to managers pursuing self-interests which exposes firms to different uncertain risks, such as reducing firm value and causing extreme market outcomes. Unfortunately, too, most recent studies focused on the

developed countries, leaving considerable room to explore the linkages in emerging countries like China each with their unique characteristics.

Thirdly, with regard to state-owned/controlled enterprises (SOEs), most previous studies argue that SOEs are inefficient, but are able to borrow based on preferential treatment from government. However, China's reforms have transformed SOEs to become more like modern enterprises, giving greater autonomy and decision-making power to SOEs' executives. Executives, then, have incentives to use their political connections to pursue their self-interests agenda, such as a political career and compensation contracts, all of which may cause hidden crisis for SOEs. Most extant studies have concentrated on the impact of government ownership on firm decision-making or firm performance. The empirical research on whether government ownership influences the probability of extreme outcomes is scarce. In addition, the question of whether there are different impacts among firms controlled by different government administrative levels is again lacking.

Fourthly, there is an extensive theoretical and empirical literature on the impact of corruption on macro and mezzo economic levels, such as GDP growth, FDI and industry development. Until recently, however, there have been relatively few studies on the effects of corruption at the micro firm-level. Despite the conventional wisdom about the harmful effect of corruption, in the context of Chinese relationship-based society, the impact of corruption is relatively unclear. More specifically, the causal pathways linking political corruption and corporate tax management are little known. Therefore, this study will investigate the impact of corruption on corporate tax management. The results will provide a more rigorous understanding of how corruption impacts firm-level financial activities in China or other emerging countries without a perfect market mechanism.

Finally, compared with developed countries with well-developed legal and social systems, the impact of external institutional development is much more important in transition economies (Chen, Lee, & Li, 2008). In the context of China, because of differences in the history, natural, social and even cultural environments between regions, large regional institutional gaps including the uneven process of marketization exist. Most empirical research examines the impacts of firm-level governance characteristics on corporate tax management, but overlooked the macro institutional characteristics. Hence, China represents a worthwhile research to explore the impact of institutional development on corporate tax management.

2.5. Theoretical Framework

Achieving shareholders' wealth maximization is the main goal of a firm. Corporate tax as a motivating factor of corporate financial decisions impacts corporate performance. Managerial actions designed to minimize corporate tax obligations are thought to an increasingly important feature. There is an argument of the economic consequences of corporate tax management. In traditional theory, tax management activities are costless to investors, the avoidance activities result simply in the transfer of value from the state to shareholders.

However, the above view overlooks an important feature of modern corporations that is the separation of ownership and control. According to rational choice theory, an individual is referred to as *homo economicus*, characterized as rational and pursuing self-interests. Shareholders (principals) are the owners of enterprise resources. Managers (agents) are the persons in charge of the enterprise resources. If the managers are also the owners of enterprises, the principals and agents have a common interest that is maximization of profits. However, if the agents are not the owners of enterprise resources

or only have an employment relationship with principals, they only sign a contract that specifies what the agents do with the resource, and how the returns are divided between agents and the principals. From this point of view, the managers can use their control rights to pursue self-serving maximization rather than maximizing shareholders' wealth, which causes interest conflicts between principals and agents. In the context of the information asymmetry and information opaqueness between principals and agents, agents as the party having more information have more tendency to engage in managerial opportunism. Thus, the deviation from the principals' interests by the agents results in agency costs. As an example, Desai, Dyck, and Zingales (2007) propose a situation in which self-interested managers structure the firm in a complex manner in order to facilitate transactions that reduce corporate taxes and divert corporate resources for private use. Therefore, under the agency theory framework, the consequences of tax management are inconclusive.

Furthermore, the bad news hoarding theory reinforce the agency view of corporate tax management, which points out that managers have incentives to conceal negative corporate news for their personal interests. When the managers' incentives for conceal bad news collapse or when the accumulation of the bad news reaches a tipping point, all of the undisclosed negative information will be suddenly released to the stock market, resulting in a stock price crash. The complex and opaque tax management activities can be used as an effective means for managers to manipulate earnings and hide bad news for an extended period, which can cause a high likelihood of future crashes. Thus, the aggressive and complex form of corporate tax management can lead to future extreme outcomes of in the financial market.

To extend and contribute to the literature on corporate tax management in China and other transition economies, the macro-level characteristics should be taken into consideration. Due to economic reforms and fiscal decentralization, China's regional economic development has shown different speeds, concurrently with high corruption. Hence, the helping hand and grabbing hand theories have been introduced to explain how macro environment influences corporate tax behaviors and its consequences. On the view of "helping hand", firms can make profits by paying a bribe premium, such as managers bribe local officials to achieve corporate tax saving. On the other view of "grabbing hand", if firms operate in an environment with widespread and rampant corruption, which means the governments are sufficiently disorganized and the bureaucrats extremely engage in rent-seeking activities. Firms have to expend much more financial and human resources to seek rent via corruption. In this case, covert bribing system acts as a "grabbing hand", where the firms' net losses/costs via bribing are higher than their net profits. As a result, it may affect negatively the enthusiasm of firms for avoiding tax or obtaining tax-related benefits via bribe. Therefore, the impact of corruption on economic activities may not be linear in that both theoretical arguments, which may be compatible with different levels of corruption.

The theoretical framework is shown in Figure 2.1, which illustrates the three research questions with related theories in this thesis.

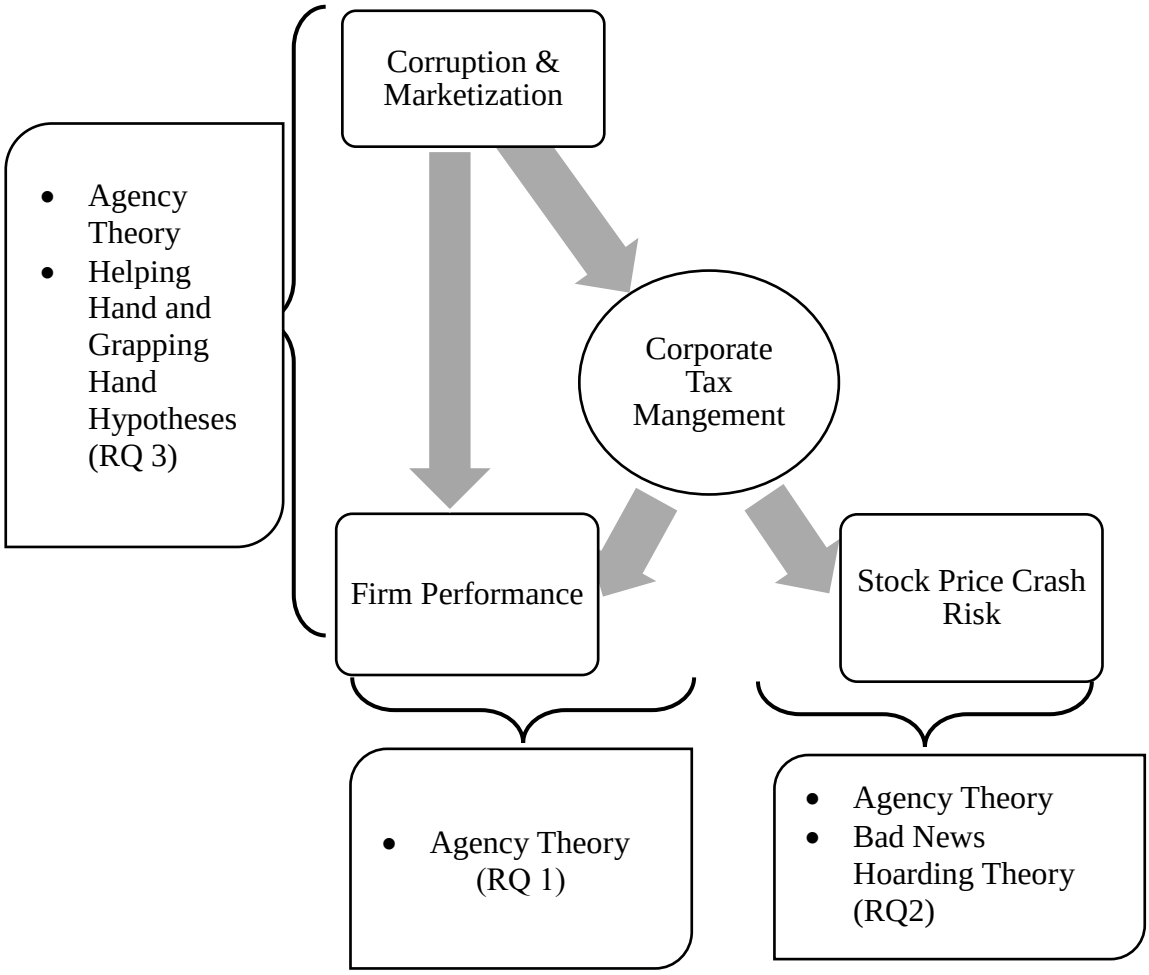

Figure 2.1: Theoretical Framework
Note: RQ is research question
(Source From: Author)

2.6. Analytical Framework

Following the above review, this study investigates the economic consequences of corporate tax management in the context of China. Firstly, under the perspective of agency theory, corporate tax management can provide tools and masks to managers to achieve their self-serving objectives, as a result harming the firm value (Chen, Chen,

Cheng, & Shevlin, 2010; Mihir A. Desai & Dhammika Dharmapala, 2009). Hence, Chapter 3 tests the relationship between tax management and firm value to provide a preliminary understanding of the firm-level consequence of corporate tax management in China's listed enterprises. Then, the chapter investigates the flow of how firms through corporate tax management increase firms' market value.

In Chapter 4, the study is motivated by both agency theory and bad news hoarding theory, and investigates the extreme market outcomes of corporate tax management. In the context of China, political promotion is an effective incentive mechanism for SOEs' managers (Chen et al. 2011), which facilitates such managers to conceal adverse operating outcomes. This chapter further investigates the effect of different levels of government ownership on the relationship between tax management and stock price crash risk.

To explore how do macro-level characteristics impact corporate tax management and its economic consequences, Chapter 5 examines the impact of corruption and marketization. Firstly, the study examines the direct impact of regional corruption on corporate tax management. The results will be used to explain whether corruption acts as a "grabbing hand" or "grabbing hand". Then, to explore the effect of market reforms, the study further examines how does marketization moderate the impact of corruption on corporate tax management. At the end, the chapter examines how does corruption influence the consequences of corporate tax management.

2.7. Research Methodology

This study uses the quantitative research approach to investigate the economic consequences of corporate tax management coupled with Chinese specific characteristics. All the three research questions use the secondary data. The study gathers the relevant

data involving corporate tax management, firm performance, stock price crash risk, Chinese specific characteristics, and other related firm determinants of China's listed enterprises. For modeling purposes, method of Structural Equation Modeling (SEM) is employed to test the relationship between corporate tax management and firm performance in Chapter 3. In Chapter 4, Ordinary Least Square regressions and dynamic system Generalized Method of Moments regressions are adopted to analyze the second research question, which is the market outcomes of corporate tax management. And, Chapter 5 uses Ordinary Least Square, Fixed-effect, and Non-linear regressions to examine the third research question of this thesis, which is the relationship between macro-level factors, tax management, and firm performance.

Because the sampling size and the specific research models adopted vary by research questions, the detailed descriptions of the methodology will be discussed in each following analytical chapter (Chapters 3, 4, and 5), which includes research design, research models, variables, sample selection, and statistical techniques for hypothesis testing purposes.

2.8. Chapter Summary

This chapter firstly reviewed the key theories related to corporate tax management, which formed the theoretical pillars of this study, helping to understand the incentives and consequences of corporate tax management. In a nut shell, corporate tax management can serve as a tool to managers engaging in managerial opportunism activities, which affects firm performance and causes future crashes. The chapter then reviewed past empirical research and finds potential research gaps in existing studies. This has led to the decision to investigate the economic consequences of corporate tax management in China's listed enterprises. More specifically, in the unique economic setting of China, the economic

consequences of tax management will be further moderated by government ownership, corruption, and degree of marketization. At the end, the analytical framework and a brief introduction of research methodology have been provided.

CHAPTER 3: CORPORATE TAX AVOIDANCE AND PERFORMANCE: EVIDENCE FROM CHINA'S LISTED COMPANIES

3.1. Introduction

To the extent that taxation impacts a firm's bottom line, the textbook argument that tax imposes a burden on firms has been subject to extensive research, mainly by linking it to firm characteristics. To reduce this burden, corporate tax management can be employed as a useful method, with salutary effects on the firm.

If successfully deployed, a tax management strategy would transfer wealth from the state or government to shareholders (Mihir A. Desai & Dhammika Dharmapala, 2009). Therefore, it should result in relatively low taxes payable (that is, low effective tax rates), and higher after-tax cash flows, which will show up in analysts' financial reports and ultimately, stock prices. According to Swenson (1999), the stock market perceives firms that pay lower taxes as being better at controlling costs. However, in practice, empirical evidence on tax management shows the opposite is the case. In modern corporations, the conflicts of interest between managers and shareholders (Chen & Chu, 2005; Crocker & Slemrod, 2005) create opportunities for managerial diversions which discount the value of firms (Desai & Dharmapala, 2006; Mihir A. Desai & Dhammika Dharmapala, 2009).

Further, even if shareholders' wealth is maximized, tax management can nevertheless have both adverse firm- and macro-level effects (Hanlon & Heitzman, 2010; Hanlon & Slemrod, 2009; Robinson, Sikes, & Weaver, 2010). At the firm level, tax management diminishes the firm's discharge of its social irresponsibility (Erle, 2008). At the macro-level, tax avoidance represents the loss of resources to the government that can finance

the provision of public goods (Sikka, 2010).

This chapter examines the relationship between tax management and firms' performance, manifested through the firms' value, in the context of China. More specifically, this chapter seeks to answer the first research question of this thesis, viz. what is the effect of corporate tax management on firm performance, and how tax management achieves firm value improvement, which divides into three sub-questions. The first sub-question is whether there exists a link between tax management and firm value in China and the associated objective is to explore this link in China's companies. The second sub-question is whether the country's transition and corporate reforms have moved China's enterprise environment closer to the norm of the developed countries so that the tax management – firm value linkage in China converges with what is found in the latter countries. To the extent gaps in convergence remain, the third sub-question and objective are respectively to ask why and to explain these gaps in terms of China's reform experience.

In undertaking this chapter, existing studies do not provide much guidance. Compared with research on developed markets, especially the US, studies of tax management in emerging markets especially China, are very limited. Most extant research on China examines the relationship between tax management and firm characteristics, such as firm size, ownership and leverage (Adhikari, Derashid, & Zhang, 2006; Badertscher, Katz, & Rego, 2013; Wu, Wang, Luo, & Gillis, 2012). This chapter, however, focuses on the impact of tax management activities on a firm's market value improvement through improving growth and profitability.

The structure of this chapter is as follows: Section 3.2 presents a brief literature review and the hypotheses to be tested. Section 3.3 displays the methodology, which lays out measures of four latent variables, model specification, data characteristics and data analysis. Section 3.4 discusses the empirical results. Finally, Section 3.5 summarizes the chapter by drawing several implications.

3.2. Literature Review and Hypothesis Development

Corporate tax management is traditionally viewed as a tax-reducing device that transfers interests from the government to shareholders to maximize shareholders' value, although an expanding body of work on agency theory emphasizes that tax management is closely related to corporate governance because of the agency cost implications. In practice, the complexity and ambiguity of tax management can shelter managers who engage in various forms of managerial rent extraction such as earnings manipulation and insider transactions which would reduce after-tax cash flows (Mihir A. Desai & Dhammika Dharmapala, 2009; Desai, Dyck, & Zingales, 2007). Enron's case is a striking example. In the 1990s, Enron made use of structured financing transactions to evade tax, leading to government prosecution and its collapse. Beyond that, firms also need to shoulder the combined tax avoidance costs, which include direct tax planning, compliance and non-tax costs. Lee, Dobiyanski, and Minton (2015) suggest that if shareholders cannot fully understand the cost-benefit calculus, tax management activities could reduce firm value.

Empirical research on the impact of corporate tax management on firm value has produced mixed findings. Mihir A. Desai and Dhammika Dharmapala (2009) found no significant relationship between tax avoidance and firm value, but a positive relationship for firms with dominant institutional ownership. They suggest that shareholders consider

that ability to control the managers can add value to tax avoidance. Hanlon and Slemrod (2009) examined the market reaction to news about a firm's application for tax shelters. They find that such news dampened stock price. Chen, Hu, Wang, and Tang (2014) showed that tax avoidance is also inversely related to firm value, but this can be mitigated by information transparency.

In comparison with the research focused on developed countries, Claessens and Fan (2002) argued that the agency problems in Asian countries are compounded by a lack of corporate transparency that permitted rent seeking and insider transactions. China represents a special case because of the important role played by the government. Piotroski, Wong, and Zhang (2015) reported that China's financial market and listed firms are operating in an environment of poor information. In addition, China's taxation system started to open up only in the last three decades, is not comprehensive and has many loopholes. These factors provide more space for managers to engage in managerial opportunism and finally to maximize their self-serving objectives.

Given the above, and further in the context of the Chinese institutional setting, corporate tax management may not necessarily increase firm value. Reflecting this, the first hypothesis in this chapter is:

Hypothesis 3.1 (H3.1). Corporate tax management has a direct negative relationship with firms' market value.

Extensive empirical literature has shown that firms with good profitability and growth performances are generally associated with better firm value. Varaiya, Kerin, and Weeks (1987) found that firm profitability and growth significantly impact shareholders' value. Naceur and Goaied (2002) investigated the relationship between value creation and

profitability in the Tunisia stock exchange. They found that future value creation is significantly and positively related to a firm's profitability. Furthermore, Fama and French (1998) argued that if firms have a good record of profitability, a positive relationship exists between taxation of dividends and firm value. For these reasons, good profitability and growth performance should be important factors in firm value maximization.

Literature also shows corporate governance has a significantly positive association with profitability and growth. Durnev and Kim (2005) found firms with better governance to grow faster and be more profitable. In addition, Peni and Vähämaa (2012) reported that large publicly traded US banks with stronger corporate governance mechanisms have higher profitability. Moreover, Harford, Mansi, and Maxwell (2012) indicated that firms with low shareholder rights spend cash more quickly than those with stronger governance. Besides, Yen (2005) stated that firms with a management-friendly board structure would choose projects for which growth prospects are promising.

The above suggests that corporate governance impacts a firm's profitability and growth. Therefore, profitability and growth performance are posited as two mediators in the relationship between tax avoidance and firm value. The following are Hypothesis 3.2a and 3.2b:

Hypothesis 3.2a (H3.2a). Profitability performance mediates the relationship between tax management and market value. (Path *cd*, shown in Figure 3.1.)

Hypothesis 3.2b (H3.2b). Growth performance mediates the relationship between tax management and market value. (Path *ab*, shown in Figure 3.1.)

Profitability performance reflects firms' history of generating returns (Miller, Washburn, & Glick, 2013). Growth performance represents firms' past ability to grow in size (Whetten, 1987). Firm size is positively related to economies of scale and market power, both of which result in higher future profitability. Moreover, the market value of firms is based on their expected performance, which should be correlated with firms' profitability and growth performance (Santos & Brito, 2012).

Therefore, corporate tax avoidance would have an indirect effect on market value through improving its growth and then profitability. Hence, Hypothesis 3.3:

Hypothesis 3.3 (H3.3). Corporate tax management is positively but indirectly related to market value through growth and profitability. (Path *aed*, shown in Figure 3.1.)

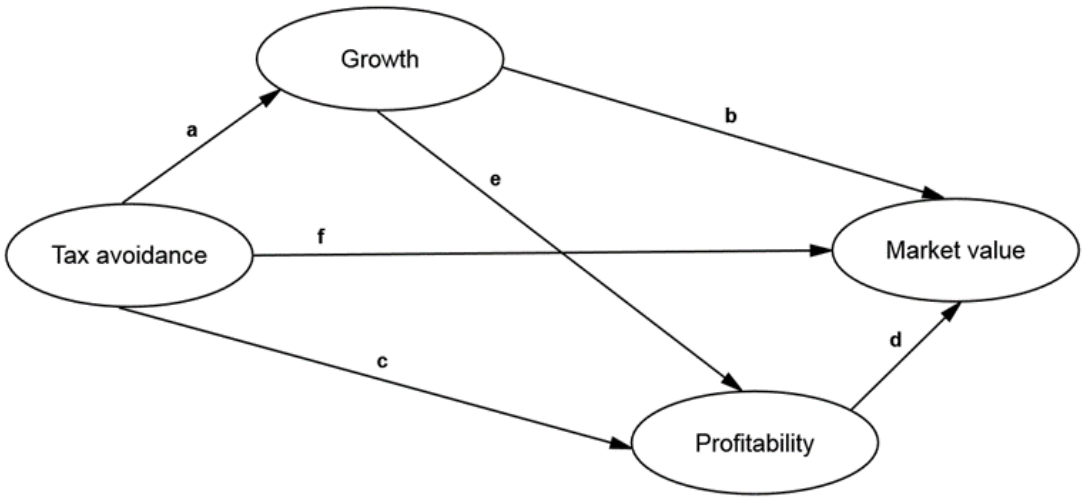

Figure 3.1: Conceptual Model of Structural Equation Model

(Source: Plotted by Author)

3.3. Research Methodology

3.3.1. Measures

Four constructs are used in the model to examine the relationships between corporate tax management, growth, profitability and market value performance. The constructs and their indicators (observed variables) are discussed below. Figure 3.2 shows the relationship between the observed and latent variables.

3.3.1.1. Corporate Tax Avoidance

Previous research had considered the corporate effective tax rate (ETR) as a proxy for the corporate tax burden (Gupta & Newberry, 1997; Richardson, Wang, & Zhang, 2016; Wu, Wang, Luo, & Gillis, 2012). It is simultaneously an important index used to measure the effectiveness of tax avoidance. This chapter adopts two corporate effective tax rates (ETRs) to represent tax management (risky and non-risky strategies) (Badertscher, Katz, & Rego, 2013). The first measure is the *ETR1* defined under GAAP as total corporate income tax expenses divided by pre-tax income. The second measure is the *ETR2* defined on a cash basis as corporate income tax expenses minus deferred tax expenses dividend by pre-tax income. The lower effective tax rates represent a lower corporate tax burden, which refers to firms with a higher level of corporate tax management. To provide a direct and intuitive understanding of the relationship between corporate tax management and firm performance, in the model process, the chapter uses the opposite number of the two ETRs, denoted by *ETR1_neg* and *ETR2_neg*. (See Table 3.1)

All ETR measures are well understood by financial statement users. Specifically, GAAP ETR is affected by changes in tax reserves and the valuation allowance, while Cash ETR is influenced by the timing of tax payments, settlements with tax authorities and some type of earnings management (Hanlon & Heitzman, 2010). However, in focusing on ETRs as the proxy for tax avoidance and its link with firm value, this chapter does not investigate the differences between the two measures.

3.3.1.2. Profitability Performance

Profitability is one of the major performance dimensions of concern in this chapter. It is defined as the firm's earnings net of costs and is commonly measured by the measures return on assets (*ROA*), return on invested capital (*ROIC*), and return on sales (*ROS*). The *ROA* is the most often used accounting measure of performance in financial research (Cable & Mueller, 2008), because it has been shown to represent a firm's performance well (Peng & Luo, 2000; Rowe & Morrow, 1999). It represents the ability of firms to use their assets to generate profit. The *ROS* is also used by many researchers (Delen, Kuzey, & Uyar, 2013; Jang & Park, 2011), because it can reflect the profits from a company's sales in the short-term. The *ROIC* is a measure of the return earned on the invested capital. Damodaran (2007) notes that *ROIC* is a key input in both corporate finance and valuation. This chapter employs all the three measures to make up the latent variable of profitability. (See Table 3.1)

3.3.1.3. Growth Performance

In this chapter, a firm's growth performance is measured by the growth rates of sales revenue (*SALG*), sales income (*SIG*), and net income (*NIG*). Sales growth has become a common measure of firm growth rate in many studies (Anthony & Ramesh, 1992; Brush,

Bromiley, & Hendrickx, 2000; Jang & Park, 2011; Serrasqueiro, 2009). Wang and You (2012) believed that the growth rate of sales income would yield more reliable estimation results in the case of China. Moreover, net income growth represents the rate at which firms have grown profits. Stocks that experience faster net income growth are generally favored over those with slower net income growth. Therefore, the chapter employs growth rate of net income (Delen, Kuzey, & Uyar, 2013). Table 3.1 describes the variables' definitions.

3.3.1.4. Market Value Performance

This chapter measures firms' market performance using three market-based measures of return. These are Price-to-book (*PB*) ratio, Tobin's Q (*TobinQ*), and Market capitalization improvement (*MCI*). The *PB* is the ratio of stock price to book value per share (Brealey & Myers, 2000; Montgomery, Thomas, & Kamath, 1984). In addition, Tobin's Q is the ratio of the market value of a firm's debt and equity to the ending total assets (Mihir A. Desai & Dhammika Dharmapala, 2009; Yu, 2013). It is widely used because it takes account of the book and market values of equity and the value of debt (Mihir A. Desai & Dhammika Dharmapala, 2009; Firth, Gong, & Shan, 2013). Moreover, market capitalization reflects the stock market's valuation of a firm (Abdolmohammadi, 2005) and is defined in this chapter as the improvement of the total market value of the shares outstanding. (See Table 3.1)

Table 3.1: Variable Names and Definition

Constructs	Causes-Effects	Definition of Indicators
	Causes	
A. Tax Management		
	ETR1_neg	Opposite number of Effective tax rate 1 (ETR1); ETR1_neg = - Tax expenses / pre-tax income
	ETR2_neg	Opposite number of Effective tax rate 2 (ETR2); ETR2_neg = - (Tax expenses-deferred tax expense) / pre-tax income
	Effects	
B. Firm performance		
1. Profitability	ROA	Return on Total asset; Net income / total assets
	ROIC	Return on invested capital; Net operating profit after taxes /Invested capital
	ROS	Net profit margin; Net $income_{i,t}$ / revenues
2. Growth	SIG	Sales income growth rate; (Sales $income_{i,t}$ -Sales $income_{i,t-1}$)/Sales $income_{i,t-1}$
	SALG	Sales growth rate; ($Sales_{i,t}$-$Sales_{i,t-1}$)/$Sales_{i,t-1}$
	NIG	Net income growth rate; (Net $income_{i,t}$-Net $income_{i,t-1}$)/Net $income_{i,t-1}$
3. Market value	TobinQ	Tobin's Q*
	PB	Price-to-book ratio;
	MCI	Market capitalisation improvement

* In China, due to the special split-share structure, some shares are non-tradable in the stock market. This chapter adopts the same method as to set the market value of non-tradable shares as their book value (Qian & Wu, 2003, p. 31). The calculation of Tobin's Q is the ratio of the market price per share multiplied by the number of tradable shares plus the book value of equity per share multiplied by the number of non-tradable shares plus book value of total debt over the book value of total assets.
Source: Prepared by author

3.3.2. Model Specification

Figure 3.2 shows the structural model which underpins the causal relationships among four latent constructs: corporate tax management, growth, profitability, and market value.

The direct relationship between tax management and firms' market value (Hypothesis 3.1) is first examined using China's listed enterprises (Figure 3.2., Path *f*). Given the existing evidence on the profitability, growth and corporate governance relationships and the impact of their relationships on firms' market value as explained in Section 3.2., this chapter then investigates the mediating roles of profitability and growth in the tax management - firm market value relationship. Paths *ab, cd, aed* (Figure 3.2.) represent three different specific indirect relationships between tax management and firms' market value, which are Hypothesis 3.2a, 3.2b, and 3.3.

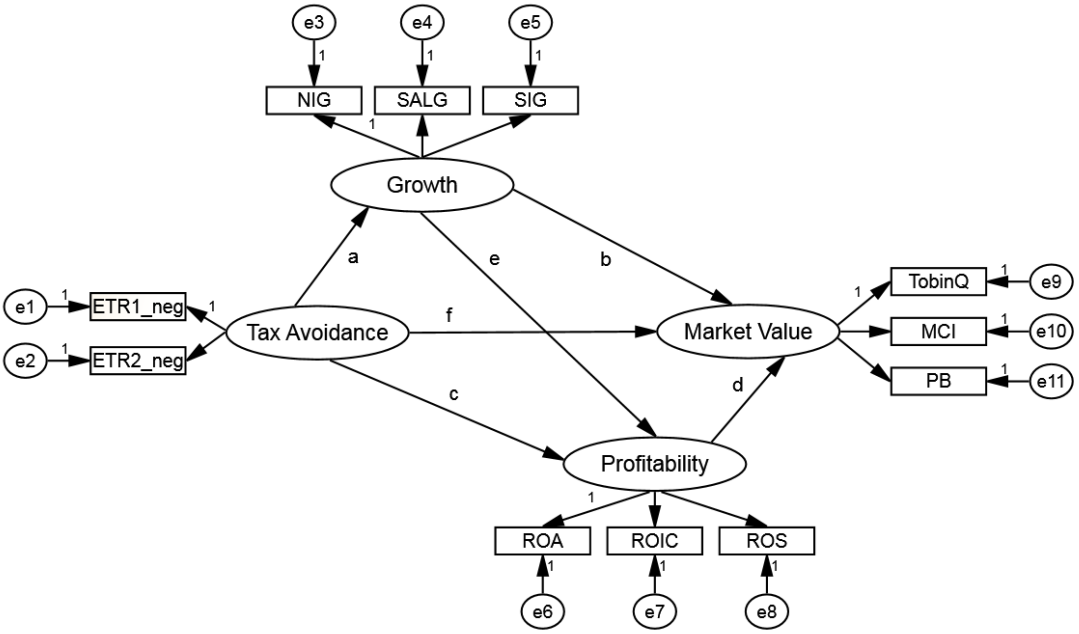

Figure 3.2: Structural Model
(Source: plotted by Author)

3.3.3. Data and Sample Selection

The annual time series data is for the period 2004-2012. For ETR1, the deferred tax expenses were calculated based on the previous year's data, which means that the period of analysis begins with 2005. All data were obtained from the China Stock Market and Accounting Database (CSMAR)[4].

Data used for estimation exclude the following: (1) financial industry firms which, according to the China Securities Regulatory Commission Industry Classifications (CSRCIC), are heavily regulated and their tax incentives differ from firms in other industries; (2) "Special Treatment" (ST) stocks[5]; (3) both of ETR1 and ETR2 with negative values or values larger than one (Gupta & Newberry, 1997; Wu, Wu, Zhou, & Wu, 2012); and (4) observations with missing values. Finally, a sample of 7651 firm-year observations is employed over the period 2005-2012. The sample selection process is shown in Table 3.2.

Because the bootstrap method is sensitive to extreme values (Ette & Onyiah, 2002), this chapter winsorises data at the 2.5% level to reduce the effect of outliers (Zhang, Farrell, & Brown, 2008). All estimation was done using AMOS Version 21. Table 3.3 shows the correlation coefficients between all variables.

[4] The CSMAR database is developed by Shenzhen GTA Information Technology Corporation Limited. Co., Ltd., and designed by the China Accounting and Finance Research Centre of the Hong Kong Polytechnic University.

[5] All stocks labeled ST have seen their business in the red for two consecutive years representing the firms with financial problem or other abnormal conditions, which are technically on the brink of delisting. ST or Special Treatment shares and the original idea behind this classification is that it would act as a warning to investors.

Table 3.2: Sample Selection

Non-financial China's A-share listed companies	Total sample
Initial observations	19,184
Less: observations with ETRs[1] less than 0 or over than 1	17,330
Less: ETRs with missing value	10,183
Less: MV[2] variables with missing value	8,556
Less: GP[3] variables with missing value	7,653
Less: PP[4] variables with missing value	7,651
Number of observations in the final analysis	7,651

[1] ETRs includes ETR1 and ETR2

[2] MV, latent variable of Market value performance, including P/B ratio, Tobin's Q and MCI;

[3] GP, latent variable of Growth performance, including sales growth, net income growth, and sales income growth;

[4] PP, latent variable of Profitability performance, including ROA, ROS, ROIC.

Source: Prepared by author

Table 3. 3: Correlation

	ETR1_neg	ETR2_neg	NIG	SALG	SIG	ROA	ROIC	ROS	TobinQ	MCI	PB
ETR1_neg	1										
ETR2_neg	0.773***	1									
NIG	0.102***	0.092***	1								
SALG	0.044***	0.024**	0.394***	1							
SIG	0.046***	0.062***	0.823***	0.405***	1						
ROA	0.277***	0.297***	0.238***	0.196***	0.192***	1					
ROIC	0.162***	0.173***	0.163***	0.172***	0.122***	0.709***	1				
ROS	0.231***	0.244***	0.147***	0.064***	0.109***	0.627***	0.498***	1			
TobinQ	0.127***	0.119***	0.135***	0.052***	0.132***	0.420***	0.334***	0.231***	1		
MCI	0.027**	0.018	0.307***	0.211***	0.303***	0.174***	0.114***	0.100***	0.481***	1	
PB	0.058***	0.041***	0.213***	0.170***	0.203***	0.364***	0.317***	0.178***	0.772***	0.579***	1

Note: *t* statistics in parentheses.
*, ** and *** indicate statistical significance at the 10%, 5% and 1% levels, respectively.
All variables are defined in Table 3.1.
Source: Computed by author.

3.3.4. Data Analysis

Structural equation modeling (SEM) is used in this chapter for hypothesis testing. The SEM methodology is used for three reasons. First, this chapter examines tax avoidance and firm performance by looking at three parts of firm financial performance, implying a series of causal relationships, which the SEM is well suited to handle. Second, the chapter uses 14 observed variables in which are embedded four latent variables which traditional multivariate techniques cannot deal with but SEM can (Byrne, 2009). Third, the chapter tests mediation effects, which again can be done using SEM (Anderson & Gerbing, 1992; Baron & Kenny, 1986).

The SEM consists of the measurement model and the structural model. Firstly, this chapter tests the measurement model so as not to be affected by possible interactions between the models. Confirmatory factor analysis (CFA) was conducted on the full measurement model to examine model fit. Then, the structural model was used to estimate the causal relationships among the four latent constructs.

Where the data are found to follow a multivariate non-normal distribution, the bootstrap (Preacher & Hayes, 2008) and Mackinnon PRODCLIN2 methods (MacKinnon, Fritz, Williams, & Lockwood, 2007) are used in the analyses. The chi-square (x^2) is used as the first fit index. Where x^2 is found to be heavily influenced by sample size, other goodness-of-fit indices are used (Byrne, 2009; Jr., Black, Babin, & Anderson, 2009; MacCallum & Austin, 2000). This chapter employs several other model fit indices. These include the root mean square error of approximation (RMSEA), root mean square residual (RMR), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), comparative fit index (CFI), and normed fit index (NFI). In a model with good fit, the GFI, CFI, AGFI

and NFI should be above 0.9 (Byrne, 2009; Jr., Black, Babin, & Anderson, 2009). The RMSEA and RMR should be less than 0.08 to signify acceptability (Hu & Bentler, 1998).

3.4. Empirical Findings

This section shows the goodness-of-fit for both the models, which are measurement model and structural model. In addition, this section also presents the hypothesized relationships between latent constructs.

3.4.1. Measurement Model

Table 3.4 shows the fit indices for the overall measurement model which indicate that the model was acceptable (Jr., Black, Babin, & Anderson, 2009). All the indices have statistically significant relationships with their factors.

Table 3.4: Summary of Model Fit Indices for CFA Model

Model	χ^2	*df*	GFI	AGFI	CFI	NFI	RMSEA	RMR
CFA	1790	38	0.961	0.933	0.957	0.956	0.078	0.024

Note: 5,000 bootstrap samples (Patricia M. Dechow, Richard G. Sloan, & Amy P. Sweeney, 1995).

RMSEA, root-mean-square error of approximation; RMR, root-mean-square residual; GFI, good-of-fit index; AGFI, adjusted goodness of fit index; NFI, normed fit index; CFI, comparative fit index.

Source: Calculated by author

To measure reliability, this chapter adopts composite reliability (CR) and average variance extracted (AVE). As shown in Table 3.5, the indicators are internally consistent because the composite reliability scores for all the constructs exceed the recommended

0.70 (O'Rourke & Hatcher, 2013). In addition, reliability is achieved because the AVE for each construct exceeds the desired 0.5 (Fornell & Larcker, 1981). To assess construct validity, convergent validity is assessed by determining whether each indicator's estimated pattern coefficient on its posited underlying construct factor in the measurement model is significant (Anderson & Gerbing, 1988; Marsh & Grayson, 1995). Table 3.5 shows that convergent validity is assured since all factor loadings for items are greater than 0.4 and are statistically significant ($p<0.001$) (Cabrera-Nguyen, 2010). Moreover, for discriminant validity, the average variance extracted for each construct must be greater than the squared correlations between the construct and other constructs in the model (Nusair & Hua, 2010). Table 3.6 shows that the squared correlations are lower than their corresponding AVE for the latent variables. Overall, the measurement model is shown to be valid and acceptable.

Table 3.5: Confirmatory Factor Model

Constructs and variables	Factor loadings	Composite reliability (C.R)[a]	Average variance extracted (AVE)[b]
Tax Avoidance		0.873	0.776
ETR1 (ETR1_neg)	0.85		
ETR2 (ETR2_neg)	0.92		
Market value performance		0.840	0.643
Market capitalization improvement (MCI)	0.61		
Price to book ratio (PB)	0.94		
Tobin's Q (TobinQ)	0.83		
Profitability performance		0.834	0.632
ROA	0.96		
ROIC	0.74		
ROS	0.65		
Growth performance		0.814	0.613
Sales revenue growth (SALG)	0.44		
Net income growth (NIG)	0.91		
Sales income growth (SIG)	0.90		

Note: 5,000 bootstrap samples.

[a] $CR = (\sum \text{Standardised loadings})^2 / [(\sum \text{Standardised loadings})^2 + \sum \varepsilon_j]$.

[b] $AVE = \sum(\text{Standardised loadings}^2)/[\sum(\text{standardised loadings}^2) + \sum \varepsilon_j]$, where ε_j is the measurement error.

Source: Calculated by author

Table 3.6: Discriminant Validity Matrix

	Tax avoidance	Growth	Profitability	Market value
Tax avoidance	**0.776**	0.009	0.112	0.006
Growth		**0.613**	0.062	0.064
Profitability			**0.632**	0.179
Market value				**0.643**

Note: The AVE for the respective constructs are shown in bold.
Source: Calculated by author

3.4.2. Structural Model

The overall structural model fit indices are shown in Table 3.7. All the indices suggest an acceptable fit (Jr., Black, Babin, & Anderson, 2009), indicating that the model fits the data well. Since both models are shown to be valid and reliable, the path relationships among the constructs can now be analyzed.

Table 3.7: Structural Equation Model Indices

Model	$\chi 2$	GFI	AGFI	CFI	NFI	RMSEA	RMR
CFA	1790	0.961	0.933	0.957	0.956	0.078	0.024

Note: 5,000 bootstrap samples.
RMSEA, root-mean-square error of approximation; RMR, root-mean-square residual; GFI, good-of-fit index; AGFI, adjusted goodness of fit index; NFI, normed fit index; CFI, comparative fit index.
Source: Calculated by author

In the multiple-step multiple mediator model (Hayes, 2009), the sampling distributions of *ab, cd, aed* (Figure 3.2.) tend to be asymmetric, with nonzero skewness and kurtosis (Bollen & Stine, 1990; Hayes, 2009; Stone & Sobel, 1990). Using the bootstrapping method and Mackinnon PRODCLIN2, this chapter found the structural model's total, specific mediation and direct effects to be statistically significant (Hayes, 2009; MacKinnon, Fritz, Williams, & Lockwood, 2007; Preacher & Hayes, 2008) (shown in Table 3.8), indicating that partial mediation effects existed[6].

[6] For bootstrapping percentile and bias-corrected methods, and Mackinnon PRODCLIN2, if zero is not between the lower and upper bound, then the effect is not zero with 95% confidence. Hayes, A. F. (2009) "Beyond Baron and Kenny: Statistical Mediation Analysis in the New Millennium," *Communication Monographs*, 76, 408-420. Percentile and bias-corrected methods are used to identify the existence of indirect effects. Then, Mackinnon PRODCLIN2 is used to identify and distinguish the specific indirect effects.

Table 3.8: Mediation of the Effect of Corporate Tax Avoidance on Market Performance Through Profitability and Growth Performance

Variables	Point Estimate	Product of Coefficients		Bootstrapping				Machinnon Prodclin2. 95% CI	
				Bias-corrected 95% CI		Percentile 95% CI			
		SE	Z	Lower	Upper	Lower	Upper	Lower	Upper
Total Effect	0.567	0.096	5.906	0.380	0.757	0.375	0.752	0.252	0.606
Total Direct Effect	-0.520	0.094	-5.536	-0.709	-0.340	-0.709	-0.341	-0.697	-0.344
Total Indirect Effect	1.088	0.061	17.849	0.970	1.211	0.970	1.211		
Specific Indirect Effects									
ab	0.108							0.076	0.143
cd	0.918							0.824	1.017
aed *ae*	0.061	0.001	61.018	0.005	0.010	0.005	0.010	0.005	0.010
aed *ed*		0.006	0.000	0.059	0.081	0.059	0.081	0.059	0.079

Note: 5,000 bootstrap sample.
The results based on unstandardized parameter estimates. CI, Confidence Interval.
Source: Calculated by author

The results (Table 3.8) also show that the specific indirect effects of tax avoidance on firm value through profitability and growth are significantly different from zero. Thus, all three mediation hypotheses (H3.2a, H3.2b, and H3.3) are supported[7]. Overall, it is clear that profitability and growth are mediators for tax avoidance's impact on firm value. The total indirect effect (total minus direct effect) through the three specific mediation paths (*ab,cd,aed*; shown in Table 3.8), has a point estimate of 1.088 and 95% BC and Percentile bootstrap CI of 0.970 to 1.211. This difference is non-zero. The specific indirect effect through profitability (Point estimate = 0.918) is larger than that through growth (Point estimate = 0.108) and growth*profitability (Point estimate = 0.061).

Overall, the results of the SEM model summarized in Table 3.9 indicate that firms that avoid taxes affect their market value both directly and indirectly, the latter through increasing firm's profitability and growth. The indirect relationship between tax avoidance and market value through growth and then profitability (*aed*, shown in Figure 3.1.) is positive, because good growth performance can raise market power to enhance profits and cash generation. Table 3.9 shows the paths of tax avoidance towards achieving the desired market value.

Table 3.9: Hypotheses Standardized Regression Paths

Hypotheses	Regression Paths Coefficients	Standard Path	Results
H3.1	Tax avoidance→Market value	-0.073	support
H3.2a	Tax avoidance→Growth→Market value	0.015	support
H3.2b	Tax avoidance→Profitability→Market value	0.128	support
H3.3	Tax avoidance→Growth→Profitability→Market value	0.009	support
Note: All regression parts are significant at 1% level. Source: Calculated by author			

[7] In Table 3.8, because zero is not contained in the interval; therefore, the specific indirect effects can be distinguished in terms of magnitude.

3.5. Chapter Summary

Tax reforms have been a major pillar of overall economic reforms that many governments have pursued to balance government budgets. This chapter analyzed the impact of corporate tax management on firm performance in China. Using data on A-share (main market) public-listed companies, the chapter analyzed how corporate tax management impacts market value and mediators of profitability and growth. This is necessary as tax avoidance, if unscrupulously pursued, will deny governments revenue that will be necessary to finance government expenditure. The results offer three important findings that address this chapter's research sub-questions.

First, in addressing the first research sub-question in this chapter, the results reveal that corporate behavior in China differs from those found in most existing studies, which show no direct impact of tax avoidance on firm value (Mihir A. Desai & Dhammika Dharmapala, 2009). This chapter shows a significant positive relationship that is made up of significant direct (negative) and indirect (positive) impacts. Second, the similarities between China and market economies suggest that China's corporate reforms have moved the Chinese corporate environment closer to that of market economies. This answer the second research sub-question posited earlier.

Third, and in answering the third research sub-question in this chapter, the above results can be explained by China's circumstances. The significant negative direct relationship between tax management and market value in China's listed firms is consistent with the agency cost theory of tax avoidance and its consequences on managerial rent extraction. China's still evolving market reforms show that there are imperfections that require addressing through legal and other provisions to prevent managerial rent extraction. However, the positive indirect relationships between tax

management and market value through the mediating role of firm profitability and growth performance suggest that tax management could be continued but they need to be bolstered by legal regulations to reduce the possible negative consequences from managerial rent seeking.

The above results are obtained using the SEM approach which offers a more robust set of results than past studies based on traditional regression equations. Also, past studies have not investigated the impact of after-tax cash from tax avoiding activities on firm value. Hence, this chapter provides direct evidence on how tax avoidance can help maximize firm performance.

What implications can be drawn from the findings? First, with China's corporate reforms applied to an enterprise system that differs from but is converging with the structure in most market economies, the question arises as to how urgent it is that China's system should be transformed to the latter, as has been repeatedly advised. Second, and more specifically, these findings leave open the question of the relevance of the agency perspective under state-ownership for the analysis of tax policy. In China, state ownership is an important firm characteristic impacting on firms' financial decisions, which require continued research to track the consequences of enterprise reforms. A third implication relates to the types of policies - governance, tax, regulatory, etc. - that can limit the abuses of tax avoidance. Given that tax avoidance works directly as well as indirectly to affect firm value, it is not sufficient to put in place policies that directly address tax avoidance issues.

CHAPTER 4: MARKET OUTCOMES OF CORPORATE TAX MANAGEMENT

4.1. Introduction

Taxation as a significant cost affects firms' decision-making behavior regarding the available choices in the magnitude and structure of output, disposal of net profit, the direction of capital investment, amongst many other things. Reducing corporate tax burden has become a powerful motivational force in a corporate life. Therefore, corporate tax management has emerged as an important financial strategy desired by shareholders to improve firm value. But, a series of high-profile corporate accounting scandals, such as Enron, Amazon, and Apple, were revealed and managers were accused of using complex tax management as a mask to seek personal interests, which injures the interests of shareholders and causes immense amount of government tax loss. Hence, the extreme consequences of aggressive tax management have aroused much attention by investors, governments, and researchers.

In a traditional theory framework, the main purpose of a business is to achieve the maximization of shareholders' interests over a long term. Managers, who are employed to act behalf of shareholders, are required to have a long-term focus and planning. However, in practice, there are two different arguments. First, because of an important corporate feature of management and ownership separation, managers and shareholders are faced with asymmetric information over different time horizons. Managers responsible for corporate operators are always better and earlier informed than shareholders who meet at most several times a year. At the same time, managers face

many short-term powerful incentives and pressures, such as employment contract and remuneration, which motivate them to focus their concerns for short-term profitability and stock price, and conceal firms' negative outcomes to realize their personal interests. For example, the bonuses and employment contracts of managers are generally more linked to firms' current performance rather than long-term value improvement, and even if the managers choose a project that yields little at present but high returns in future project, they will not be rewarded in profit-sharing schemes. Thus, instead of achieving the long-term return, short-term goals have become the focus of attention of managers. Second, recent research reveals that because of the incomplete information and fierce competition, shareholders of modern public listed enterprises are more like share traders shifting their focus towards a short time horizon, such as quarterly, half yearly, or annual profit. And top executives may set a "tone at the top" stressing short-term cost minimization and profit maximization. Hence, managerial myopia is becoming a pervasive and severe phenomenon on the modern corporations. Unlike reducing operating costs, tax saving does not cause direct adverse consequences on a firm's daily operation. More importantly, the complex and opaque nature of tax management also offers opportunities to managers and short-sighted investors for earnings manipulation and cover up corporate real operating performance to boost short-term stock price, which may cause corporate shares to be mispriced. The resulting mispricing would further facilitate corporate over-investment and maintain previous inefficient projects that will discount corporate future outcomes and raise future unsustainable. Once the true situations are exposed to the stock market some time in future, the firm's stock price will crash.

China's case makes for even more challenges. In contrast to developed countries with a robust tax system, China's situation differs from that of most those countries in that while reforms saw Chinese corporations made to pay corporate income tax since the 1980s, the tax system is still in a state of transition. At the same time, enterprises are

facing a heavy tax burden. Yet, in the Forbes Tax Misery Index, China has consistently ranked among the harshest taxes countries in the world since 2002 (shown in Table 4.1). The coverage of the present system is still not comprehensive and has many loopholes offering opportunities to corporations to exploit. In addition, the opaque nature of the Chinese stock market (Piotroski, Wong, & Zhang, 2015) further provides more space for managers to utilize tax management as a medium for earnings manipulation and resource diversion. In recent years, many aggressive tax management activities in China, e.g. of *Gujing* Distillery Company (*gujing gongjiu*), have aroused scrutiny at home and abroad.

Table 4.1: Tax Misery Index Ranking from 2002 to 2009

Tax Misery Index Ranking	**2002**	**2004**	**2006**	**2008**	**2009**
1	Australia	France	France	France	France
2	Austria	Belgium	China	Netherlands	China
3	Belgium	Sweden	Belgium	Belgium	Belgium
4	Canada (Ontario)	China	Sweden	Sweden	Sweden
5	Canada (Quebec)	Italy	Italy	China	Netherlands
6	China	Austria	Austria	Austria	Austria
7	Denmark	Norway	Poland	Italy	Italy
8	Finland	Greece	Spain	Argentina	Argentina
9	France	Spain	Argentina	Finland	Finland
10	Germany	Argentina	Slovenia	Hungary	Greece

Note:

1. The index ranking from Tax Misery & Reform Index compiled by Forbes magazine. The latest report was published in 2009.
2. Tax misery indicates the genuine feeling of taxpayers about their tax burden. If the government provides high-quality and satisfying public services, taxpayers will suffer less from tax misery.
3. Source from: http://www.ecns.cn/in-depth/2011/09-21/2522.shtml

China represents a case worthy of study also because its development model of state-led growth that brought it economic success has many state-owned/controlled enterprises (SOEs) in business. With their connection with government, SOEs' executives may be

more motivated to take advantage of the preferential treatment from the government to avoid taxes and pursue self-interests, such as political career advancement and cash compensations.

Government ownership of SOEs in China is categorized by several government tiers, which are central, provincial, and municipal (includes prefectural city- and county-level) SOEs. Central SOEs (*yangqi*) are generally large and complex organizations in "pillar" (key or strategic) industries with support from well-resourced central administration and subject to strict auditing. These SOEs are ultimately controlled by the central government and their top executives normally have high administrative ranks, which motivates the executives to conceal adverse corporate outcomes to ensure their political career remains sound. Provincial SOEs are second tier SOEs controlled by provincial governments[8], where both the SOEs' executives and government officials have strong political incentives because of the opportunities to leapfrog political ranks from local to central positions. In contrast, municipal SOEs are mostly far away from central government control, and the executives generally have lower or even no political rank, and lower salary, thus giving these executives temptation to use their political connection and/or to collude with local government officials to maximize their self-interests through tax management activities.

Considering the above, this chapter attempts to answer the second research question of this thesis, i.e. what is the likelihood of extreme market outcomes that corporate tax management in China's listed enterprises can bring about, and how does government ownership influence the likelihood of extreme outcomes? Accordingly, there are three sub-questions: Is corporate tax management associated with a lower crash risk in the

[8] There are 31 provinces in the mainland China, which includes 22 provinces, 5 autonomous regions (Tibet autonomous Region, Xinjiang Uygur Autonomous Region, Guangxi Zhuang autonomous region, Inner Mongolia autonomous region, Ningxia Hui Autonomous Region), and 4 directly administered municipalities (Beijing, Tianjin, Shanghai, and Chongqing).

current year and a higher probability of crash risk in the future? Do the different types of state ownership affect the relationship between corporate tax management and stock price crash? And can investing in listed state-owned/controlled enterprises be considered for investors who are risk averse?

This chapter is structured as follows. Section 4.2 introduces the China context that is vital to understanding the estimated relationships in the chapter. Section 4.3 critically reviews the related literature and develops testable hypotheses. Section 4.4 describes the data and empirical methodology. Section 4.5 reports the empirical results, and Section 4.6 concludes the chapter by drawing several implications.

4.2. The China Context

4.2.1. Economic Reforms in China and State-Controlled Enterprises

In the traditional context, state-owned enterprises (SOEs) in China were initially ideological organizations established as work units (*gongzuo danwei*) to support social and political rather than economic objectives (Leung & Cheng, 2013). In this situation, managers appointed by the government and the SOEs' staff were seen as owning an 'iron rice bowl' (*tiefanwan*) with cradle-to-grave benefits (Hua, Miesing, & Li, 2006). Hence, SOEs were viewed as highly inefficient.

The enterprise reform in China took place step by step since 1978, revealing a process of corporatization and privatization to raise funds for expansion and increase revenue. During the first two stages, the new non-state firms were allowed into the market, and their dynamic growth increased market competitive pressure on SOEs and the government bureaucrats responsible for them. Then, the managers of SOEs have been

granted more autonomy and compensation incentives to motivate them to improve their performance (Kang & Kim, 2012). Meanwhile, the government replaced the old command structure of government revenue transfer with a market-oriented system of taxation. At present, China adopts a dual system of tax collection and administration, and the revenue from corporate taxation is shared by central and local governments, with the central government's share being 60%.[9]

A Company Law was promulgated in December 1993 providing a legal framework for transforming and corporatizing traditional wholly state-owned enterprises into modern corporations, which have clarified property rights (Kang & Kim, 2012; Schipani & Liu, 2002; Yang, 2007). To focus on strategic enterprises, the SOE reform strategy turned to "grasping the large, letting go the small" (*zhuada fangxiao*). Under this policy, one thousand large state enterprises have been selected to have the government maintain controlling rights and shape the core of China's modern enterprise system. At the same time, these enterprises started to introduce a modern corporate structure and adopted professional management practices. The remaining 300 thousand small and medium SOEs were privatized though leases, mergers, sales or liquidation. The State-owned Assets Supervision and Administration Commission of the State Council (SASAC) was established in June 2003 to oversee all SOEs. Corresponding changes in employee management policies have taken place. A labor contract system[10] was introduced to SOEs, and then managers' wages and salaries in SOEs were tied to their profitability, depending on the extent to which the SOEs achieved their key performance targets like sales and

[9] The State Administration of Taxation (SAT) is responsible for the collection of corporate tax of central-state enterprises. Local governments are responsible for collecting the corporate tax from local state enterprises and all other non-state enterprises, and then transfer the 60% revenue collected to the central government (Liu, 2014).

[10] In 2003, "Interim Regulations on Supervision and Management of State-owned Assets of Enterprises" are promulgated by the China State Council Article and states that "the state-owned assets supervision and administration authority shall establish a system for evaluating the performance of the responsible persons of enterprises, sign performance contracts with the responsible persons of enterprises appointed by it, and conduct annual and office-term evaluation of the responsible persons according to the performance contract". More information from http://en.sasac.gov.cn/n1408035/c1477199/content.html
And in 2009, the government issued the regulations on top managers' pay of state enterprises. The cash compensation of a top manager in an SOE includes three parts: a bases salary, a performance-based bonus, and an incentive income, while the performance-based bonus is flexible and varying based on the firm performance (Xu, Li, Yuan, & Chan, 2014).

profit targets.

Hence, from the perspective of the modern China's SOEs, the reform has allowed them to retain a large part of firm profits together with much more autonomy. SOEs are expected to be more profitable and efficient, but in the meanwhile, this is also going to spark a conflict of interests in the top executives and the shareholders. The autonomy of SOEs executives motivates them to maximize their personal interests as well.

4.2.2. Aggressive Tax Management in State-owned Enterprises

The above has been borne out on several occasions. The Accounting Information Quality Inspection Announcement (No. 21) of China's Ministry of Finance (2009) reveals that some state-owned enterprises have different degrees of problems paying taxes for performance evaluation standards, access to bank loans and other purposes. The report alleged that the *Changling* branch of Sinopec's asset management firm in Jilin Province offered its employees a total of 50.08 million yuan as bonus without approval; in addition, Sinopec has also falsely stated 52.06 million yuan as income recorded in its books and 4.12-million-yuan owner's equity, accounting irregularities which resulted in failure to pay 11.82 million yuan in taxes in 2009. In 2011, the National Audit Office published the audit report of 15 central SOEs and stated that they falsified income and profit to the tune of 3.825 billion and 5.908 billion yuan, respectively, and seven of them failed to pay 471 million yuan in taxes. Based on the actual situation of China, managers of SOEs have the motivation to do aggressive tax management to show good performance either to be promoted if they are political appointees and/or to be rewarded with monetary incentives.

4.3. Literature Review and Hypotheses Development

To date, there is broad concern about and research into corporate tax management (Hanlon & Heitzman, 2010). In a traditional concept, by being corporate tax efficient, tax management is seen as a firm value-maximizing activity, transferring the benefits from government to enterprises (Hanlon & Heitzman, 2010). But from the perspective of modern corporations, corporate tax management has been given two alternative views. On the one hand, tax management would incorporate more dimensions of the agency conflict between owners and managers. Managers can disguise complex tax avoiding transactions under the ostensible objective of alleviating firms' tax burden to conduct managerial opportunism and resource diversion (Desai & Dharmapala, 2006; Mihir A. Desai & Dhammika Dharmapala, 2009). For example, Badertscher et al., (2013) find that managers can use tax management to engage in shirking and rent-extraction activities, which increase their self-interests. On the other side, especially in modern listed enterprises, there is a clear gap between theory and practice. In theory, shareholders as the owners of enterprises should be concerned with enterprises' long-term interests and development. But, because of the information asymmetry, shareholders cannot effectively predict long-term cash flows. This preference for what can be obtained with greater certainty – the 'bird-in-hand being better than two-in-the-bush' mentality may induce shareholders to engage in short-termism behavior, like short-term profit maximization and higher share price.[11] Therefore, managers may be pressured by shareholders to improve short-term performance. Thus, managers have been motivated by various incentives for short-term performance, and tax management can be employed as a useful tool to achieve it. Based on the above views, tax management activities may yield different economic consequences from what has been theoretically argued, which attracts

[11] Based on the report from ACCA "Myopic management".
Source from: http://www.accaglobal.com/za/en/student/exam-support-resources/fundamentals-exams-study-resources/f9/technical-articles/myopic-management--causes-and-remedies.html

considerable interest in the literature.

Recently, exploring the extreme market outcomes of stock price crash has become a hot topic. Jin and Myers (2006) develop a bad news hoarding theory, and empirically show that enterprises in an information opaque market are more probability to meet a high risk of the stock price crash. More specifically, lack of information transparency gives managers variety of motivations to strategically hide and accumulate firms' bad news for their personal interests, such as to secure their compensation and career development. When these incentives disappear or the accumulated negative information reaches a certain threshold, then all of the undisclosed negative information will be suddenly released to the stock market, resulting in a stock price crash. Hutton, Marcus, and Tehranian (2009) and Kim, Li, and Li (2014) show the positive relationship between opaqueness of financial reports and future crash risk.

The complex and opaque characteristics of tax management can offer tools and opportunities for managers to hide firms' negative information for a certain period, which leads to the high probability of future stock price crash. Kim, Li, and Zhang (2011), using U.S. firm-level data, examine the effect of corporate tax avoidance behavior on future crash risk. The results show that tax avoidance is positively correlated with the future crash risk, but this relationship can be alleviated for firms with a strong external monitoring mechanism.

In comparison with research in developed countries (Abdul Wahab & Holland, 2012; Badertscher, Katz, & Rego, 2013; Mihir A. Desai & Dhammika Dharmapala, 2009; Mihir A Desai & Dhammika Dharmapala, 2009), Claessens and Fan (2002) document corporate governance conditions in Asian countries, where agency problems are worsened by low corporate transparency accompanied with many rent-seeking and relation-based

transactions, extensive group structures, and risky financial structures. Piotroski and Wong (2012) show that in addition to concentrated ownership structures, weak legal protection, highly politicized institutional arrangements, rent-seeking behavior, and corruption, China suffers from opaque information environments and weak corporate transparency. Following Jin and Myers (2006), Piotroski, Wong, and Zhang (2011) using Chinese data, find that China's stock market has a significant higher negative skewness in daily excess returns than the global average. Hence, since the low information transparency in China, the bad news suppression will cause a greater frequency of stock return crashes in the future. The following are Hypothesis 4.1 and 4.2 of the chapter.

Hypothesis 4.1 (H4.1). Corporate tax management is negatively associated with contemporaneous stock price crash risk.

Hypothesis 4.2 (H4.2). Corporate tax management is positively associated with future stock price crash risk.

Most prior studies argue that governments as the controller of the state-owned/controlled enterprises (SOEs) appoint bureaucrats on behalf of the government to serve social and political interests, such as employment and social security (Jensen & Meckling, 1976; Ross, 1973; Xu, Zhu, & Lin, 2005). However, this view overlooks the complex incentives of individual bureaucrats and managers in modern China's listed state-owned/controlled enterprises (LSOEs). There are two strands of literature related to listed state-owned/controlled enterprises of relevance to this chapter. The first strand shows that managers of LSOEs mostly are bureaucrats appointed by the government to represent government (ultimate controlling shareholders) in firm decision-making. Compared with managers in private enterprises, these managers in LSOEs have more incentives to seek future political advancement. Advance to a higher level of the political

hierarchy will garner more privileges even after they leave their position (Tu, Lin, & Liu, 2013); hence it is natural that managers in LSOEs try to demonstrate outstanding firm performance to the government, which motivates them to conceal adverse operating outcomes. The second strand shows that the reforms have gradually improved the efficiency of the managerial labor market for SOEs, especially for listed SOEs, and the performance-based bonus policy gives the managers of SOEs further incentives to withhold negative information and show an outstanding performance. Thus, under the modern Chinese SOEs, political concerns and compensation contracts would facilitate SOEs' managers to conceal adverse firm performance.

Furthermore, China's economic reform has transformed the country financial system from fiscal centralization to fiscal decentralization. The fiscal system is decentralized into different levels of governments, which are national, provincial, and municipal governments (including cities, prefectures, and counties). Accordingly, government ownership is affiliated with different administrative levels of government control. Hence, analyzing the agency problem of China's SOEs, the different level government ownership should be considered.

Since central SOEs play a strategically important role in national economy, the top executives are given a higher administrative rank at the vice-ministerial level (*fubuji*) or department-level (*zhengtingji*), which come with important political privileges (Leutert, 2016). Therefore, the political benefits are the main incentive of central SOEs' executives that motivate them to hide their firms' bad news. On the other hand, because of the important role of central SOEs in China's economy, when these SOEs meet financial problems, the government sees the need to provide a bailout to contain social unrest (Wang, Wong, & Xia, 2008). In this situation, central SOEs are offered a large security margin to stave off bankruptcy.

Local SOEs generally lack strict and independent accounting auditing and property evaluation institutions, which leads a high probability of moral hazard that agents can take advantages of information asymmetry to pursue self-interests (Mi & Wang, 2000; Piotroski & Wong, 2012; Yang, 2016). On the one hand, Mi and Wang (2000) and Chen, Lee, and Li (2008) find that there is a higher collusion between Chinese local government and SOEs' managers, which leads to an abnormally high agency costs and SOEs' inefficiency. More specifically, as an agent of the controlling shareholder, the local government officials can directly interfere in the running of their controlling SOEs (Fan, Wong, & Zhang, 2007), such as hiring acquiescent auditors to seek private gains (Shleifer, 1998). Wang, Wong, and Xia (2008) find that Chinese local SOEs are more tend to hire small local auditors within the same region that is conducive to hide bad accounting information. Moreover, local governments are also deemed as privatization-friendly leaders, keen to privatize their SOEs to increase local fiscal revenue and more importantly to seek personal benefits from the privatized firms (Liu, Sun, & Woo, 2006). Moreover, existing research also find that the local governments are the big players behind a series of privatization, especially at the municipal and county levels (Garnaut, Song, Tenev, & Yao, 2005; Tenev, Zhang, & Brefort, 2002).

Under the modern system governing Chinese SOEs, executives have motivations to pursue a self-serving agenda (for political career advancement and higher compensation) by using tax management to hide bad news and dress up their performance. Compared with other enterprises, municipal-SOEs may face a comparatively high risk of closure when they meet downturns and financial scandals. Because of the weaker protections from governments, the underperforming municipal SOEs are easily abandoned or privatized by municipal governments. Therefore, when the accumulated negative information releases to the stock market, municipal SOEs would face more crash risk. The following is hypotheses 4.3a, 4.3b and 4.3c of the chapter.

Hypothesis 4.3a (H4.3a). Firms controlled by central government have a weaker correlation between tax management and future risk of stock price crashing.

Hypothesis 4.3a (H4.3b). Firms controlled by provincial government have a weaker correlation between tax management and future risk of stock price crashing.

Hypothesis 4.3b (H4.3c). Firms controlled by municipal government have a stronger correlation between tax management and future risk of stock price crashing.

4.4. Data and Empirical Methodology

4.4.1. Sample and Data

This chapter uses data for all China's A-share (main market) listed enterprises in Shanghai and Shenzhen stock exchanges, excluding enterprises in the finance industry. Financial industry firms which according to the China Securities Regulatory Commission Industry Classifications (CSRCIC), are heavily regulated and their tax incentives differ from firms in other industries, the study excluded enterprises in the financial industry. The period covered is from 2008[12] to 2013. All data are from the China Stock Market and Accounting Research (CSMAR) database. In addition, to get more complete and accurate ownership data, part of the state ownership data is hand-collected from corporate annual reports.

[12] During the fifth Session of the tenth National People's Congress (NPC) on March 16, 2007, the new Corporate Income Tax Law was approved and became effective on January 1, 2008. The new tax law set a unified tax rate of 25% for both domestic companies and foreign invested companies, and changed the current tax holiday, preferential tax treatments and transitional provisions (See more detail from: http://www.npc.gov.cn/englishnpc/Law/2009-02/20/content_1471133.htm). Under the previous tax law, domestic companies had been assessed at a 33% statutory income tax rate; while certain foreign companies enjoyed preferential tax rates of 24% or 15%. To mitigate the effect of new Corporate Income Tax Law, the sampling in this chapter began in 2008.

In line with Wang, Wong, and Xia (2008), Wu, Wang, Luo, and Gillis (2012), and Bradshaw, Liao, and Ma (2012), listed state-owned/controlled enterprises in this study is defined as if their ultimate controller is the central, provincial or municipal government. If there were two or more types of owners controlling a listed firm, the chapter classified the firm's ownership type based on who was the ultimate largest shareholder.

In addition, this chapter also excluded data of firms for which firm-year observations are fewer than 26 weeks of stock return and have non-positive book values and total assets. And, corporate effective income tax rates (ETRs) with negative values or values larger than one. With these exclusions, the sample of panel data consisted of 6706 firm-year observations. Table 4.2 provides a list of variables used in this chapter. To eliminate the effect of outliers, the chapter winsorizes variables at the top and bottom 1%.

4.4.2. Variables Used

Four measures of corporate tax management were used to capture different aspects of corporate tax management activities. Corporate effective tax rates can reflect all tax management transactions, even aggressive tax avoidance through permanent book-tax differences (Chen, Chen, Cheng, & Shevlin, 2010). The first measure is corporate current effective income tax rate (*ETR*). It is defined as tax expenses minus deferred tax expenses over pre-tax income. In addition, this chapter also looks at a three-year ETR (*LETR*), which is intended to achieve better matching between taxes paid and the income related to these taxes (Dyreng, Hanlon, & Maydew, 2008). The chapter complemented the effective tax rate with two additional book-tax difference measures, i.e. book-tax difference (*BTD*) and residual book-tax difference measure (*DTAX*). The residual book-tax difference captures more risky tax avoidance associated with tax shelter transactions (Hanlon & Heitzman, 2010). Table 4.2 provides the detailed definitions of these four

variables.

Following Xu, Li, Yuan, and Chan (2014), Kim, Li, and Li (2014), and Xu, Jiang, Chan, and Yi (2013), this chapter constructed two measures of stock price crash risk. Both measures were constructed on firm-specific weekly returns. The chapter firstly estimated firm-specific weekly returns, symbolized by $W_{i,t}$.

$$R_{i,t} = \alpha_i + \beta_1 R_{m,t-2} + \beta_2 R_{m,t-1} + \beta_3 R_{m,t} + \beta_4 R_{m,t+1} + \beta_5 R_{m,t+2} + \varepsilon_{i,t} \tag{4.1}$$

Where $R_{i,t}$ is the return on stock i in week t and $R_{m,t}$ is the value-weighed A-share market return in week t. The firm-specific weekly return for firm i in week t is measured by $W_{i,t}$=Ln $(1+\varepsilon_{i,t})$, where $\varepsilon_{i,t}$ is the residual in Eq.(4.1).

The first measure of crash risk is the negative conditional return skewness, denoted by *NCSKEW*. Eq. (4.2) shows the *NCSKEW* for each firm i in year t.

$$NCSKEW_{i,t} = -[n(n-1)^{3/2} \sum W_{i,t}^3]/[(n-1)(n-2)(\sum W_{i,t}^2)^{3/2}] \tag{4.2}$$

The second measure of crash risk is down-to-up volatility (*DUVOL*), which captures asymmetric volatilities between negative and positive firm-specific weekly returns. Specifically, the chapter firstly separates all the weeks with firm-specific weekly returns into down weeks and up weeks. The down weeks means the firm-specific weekly returns lower than the annual mean, and the up weeks are the firm-specific weekly returns higher

than the annual mean. The standard deviations for the two subsamples are computed separately, and then calculate the *DUVOL* followed by Eq. (4.3) for firm *i* in year *t*.

$$DUVOL_{i,t} = \ln\{[(n_u - 1)\sum_{down} W_{i,t}^2]/[(n_d - 1)\sum_{up} W_{i,t}^2]\} \quad (4.3)$$

A higher value for *NCSKEW* and *DUVOL* is consistent with a greater likelihood of the stock price crash risk, and vice versa.

4.4.3. Model Specification

To test H4.1 and H4.2, this chapter estimates the following regression model, Eq. (4.4). In the model, there are two alternative measures of *Crash Risk*, which are *NCSKEW* and *DUVOL*. Four measures of tax management (*Tax*) are employed: *ETR*, *LETR*, *DTAX*, and *BTD*, and standard errors are two-way clustered by year and firm.

$$\begin{aligned} Crash\ Risk_{i,t} = {} & \alpha_0 + \beta_1 Tax_{i,t} + \beta_2 Tax_{i,t-1} + \beta_3 NCSKEW_{i,t-1} + \beta_4 DTURN_{i,t-1} \\ & + \beta_5 RET_{i,t-1} + \beta_6 SIGMA_{i,t-1} + \beta_7 ROA_{i,t-1} + \beta_8 MB_{i,t-1} \\ & + \beta_9 SIZE_{i,t-1} + \beta_{10} LEV_{i,t-1} + \beta_{11} Discacc_{i,t-1} + Industry\ Dummies \\ & + Year\ Dummies + \varepsilon_{i,t} \end{aligned} \quad (4.4)$$

Eq. (4.5) estimates the moderating effect of government ownership on the relationship between tax management and future stock price crash (H4.3a, b, and c). A dummy variable of state ownership *OWNER,* and an interaction term between state ownership and

tax management *OWNER*TAX* are set up. Where, *OWNER* represents the enterprises' ultimate controller, which is controlled by central, provincial or municipal governments: *Central, Provincial,* and *Muni*. Table 4.2 shows the detailed definitions.

$$
\begin{aligned}
Crash\ Risk_{i,t} = {} & \alpha_0 + \beta_1 Tax_{i,t} + \beta_2 Tax_{i,t-1} + \beta_3 OWNER * TAX_{i,t-1} \\
& + \beta_4 OWNER_{i,t-1} + \beta_5 NCSKEW_{i,t-1} + \beta_6 DTURN_{i,t-1} + \beta_7 RET_{i,t-1} \\
& + \beta_8 SIGMA_{i,t-1} + \beta_9 ROA_{i,t-1} + \beta_{10} MB_{i,t-1} + \beta_{11} SIZE_{i,t-1} \\
& + \beta_{12} LEV_{i,t-1} + \beta_{13} Discacc_{i,t-1} + Industry\ Dummies \\
& + Year\ Dummies + \varepsilon_{i,t}
\end{aligned}
\tag{4.5}
$$

Several control variables as potential predictors of crash risk were included. $DTURN_{i,t-1}$ is the detrended average monthly stock turnover, which is a proxy for investor heterogeneity or for differences of opinion among investors. $NCSKEW_{i,t-1}$ is the lagged negative skewness of firm-specific stock returns. Kim, Li, and Zhang (2011) show that the last year return skewness is likely to influence the return skewness in the current year. The variable $SIGMA_{i,t-1}$ is the standard deviation of last year firm-specific stock returns, and $RET_{i,t-1}$ is the average firm-specific weekly return in the last year. In addition, several standard corporate control variables are included, which are $SIZE_{i,t-1}$ (the firm's natural log of total assets), $MB_{i,t-1}$ (the ratio of the market value of equity to the book value of equity), $LEV_{i,t-1}$ (the ratio of the book value of total liabilities scaled by total assets), and $ROA_{i,t-1}$ (net income divided by total assets). The variable $Discacc_{i,t-1}$ is absolute discretionary accruals, which measures accrual manipulation and is estimated from the modified Jones model (Patricia M. Dechow, Richard G. Sloan, & Amy P. Sweeney, 1995). Moreover, industry and year dummies are also included to control the effects of industry and time, respectively. The detailed variable definitions can be found in Table 4.2.

Table 4.2: Definition of All Variables

Dependent variables (Stock price crash risk)	
NCSKEW	The negative coefficient of skewness, calculated by taking the negative of the third moment of firm-specific weekly returns for each sample year and dividing it by the standard deviation of firm-specific weekly returns raised to the third power. See Eq. (4.2) for details.
DUVOL	It captures asymmetric volatilities between negative and positive firm-specific weekly returns. Firstly, all the weeks with firm-specific weekly returns have been separated into down weeks and up weeks. In the down weeks, the firm-specific weekly returns are below the annual mean, while, in the up weeks, the firm-specific weekly returns are above the annual mean. The standard deviations for the two subsamples are computed separately and then the log of the ratio of the standard deviation of the down weeks to that of the up weeks is calculated. See Eq. (4.3) for details.
Independent variables (Corporate tax management)	
ETR	ETR is corporate current effective income tax rate, calculated as (income tax expenses-deferred tax expense) / pre-tax income. ETR is set to missing when the denominator is zero or negative. This chapter truncates ETR to the range [0,1].
LETR	LETR is three years' average ETR. LETR is set to missing when the denominator is zero or negative. This chapter truncates LETR to the range [0,1].
BTD	BTD is the total book-tax difference, which equals book income less taxable income scaled by lagged assets. Book income is pre-tax income. Taxable income is calculated by current tax expenses dividing by the statutory tax rate.
DTAX	The residual book-tax difference (Desai & Dharmapala, 2006), which equals the residual from the following firm fixed effects regression, $\mathrm{BTD}_{i,t} = \beta_1 TACC_{i,t} + \mu_i + \varepsilon_{i,t}$, where BTD is the total book-tax difference and TACC is total accruals.
State ownership (OWNER)	
Central:	A dummy variable, 1 if central government is the corporate ultimate controller, and 0 otherwise.
Provincial:	A dummy variable, 1 if provincial government is the corporate ultimate controller, which includes 22 provinces, 5 autonomous regions, and 4 directly administered municipalities (Beijing, Tianjin, Shanghai, and Chongqing), 0 is otherwise.
Muni:	A dummy variable, 1 if municipal government is the corporate ultimate controller, and 0 otherwise. Where municipal government in this chapter refer to prefectural-level cities in China, which are administrative level below provincial governments but higher than township.
OWNER*TAX	An interaction variable equals OWNER times four different measures of corporate tax management, which are Central*$\mathrm{ETR}_{i,t-1}$, Central*$\mathrm{LETR}_{i,t-1}$, Central*$\mathrm{BTD}_{i,t-1}$, and Central*$\mathrm{DTAX}_{i,t-1}$; Provincial*$\mathrm{ETR}_{i,t-1}$, Provincial*$\mathrm{LETR}_{i,t-1}$, Provincial*$\mathrm{BTD}_{i,t-1}$, and Provincial*$\mathrm{DTAX}_{i,t-1}$; Muni*$\mathrm{ETR}_{i,t-1}$, Muni*$\mathrm{LETR}_{i,t-1}$, Muni*$\mathrm{BTD}_{i,t-1}$, and Muni*$\mathrm{DTAX}_{i,t-1}$.

Table 4.2: Continued

Control variables	
DTURN	DTURN is the average monthly share turnover for the current fiscal year minus the average monthly share turnover for the previous fiscal year. The monthly stock turnover is calculated as monthly trading volume divided by the total number of circulating shares outstanding during the month.
SIGMA	SIGMA is the standard deviation of firm-specific weekly returns over the fiscal year.
RET	RET is the mean of firm-specific weekly returns over the fiscal year
SIZE	SIZE is the natural logarithm of firm's total assets
MB	MB is the market-to-book ratio.
LEV	LEV is the firm financial leverage, calculated as total liabilities scaled by the book value of assets.
ROA	ROA is firm profitability, calculated as net income divided by total assets.
Discacc	It is the absolute value of discretionary accruals, where discretionary accruals are estimated from the modified Jones model (Patricia M. Dechow, Richard G. Sloan, & Amy P. Sweeney, 1995). See Appendices A.

4.5. Empirical Results

4.5.1. Descriptive Statistics

Table 4.3 shows the summary descriptive statistics of the variables. In terms of the two effective tax rates (*ETR* and *LETR*), two indications of the size of corporate tax management, the average and median of $ETR_{i,t}$ and $LETR_{i,t}$ are 22% and 21.2%, and 19.7% and 19.4%, respectively, below the statutory corporate income tax rate of 25%. Thus, it suggests that more than half of the sample firms have a lower corporate effective tax rate. Therefore, corporate tax management is a significant strategy of corporate management in China's listed enterprises.

Table 4.4 shows the correlation coefficients between the dependent variables (*NCSKEW* and *DUVOL*) and all explanatory variables. The results show that the two dependent variables of *NCSKEW* and *DUVOL* are mostly significantly and highly correlated with four measures of tax management both in year *t* and *t-1*. Table 4.5 reports the correlation matrix of the independent variables and the control variables. The table shows that almost all the correlations between variables are less than 0.6. The correlations between ETR_t and $LETR_t$, ETR_{t-1} and $LETR_t$, and ETR_{t-1} and $LETR_{t-1}$ are above 0.7, since they are used as independent variables in separate models, these do not a problem. Then, a further check on multicollinearity is to estimate variance inflation factor (VIF) statistics. The results show that the VIF values of all variables are less than 5, which indicates that the multicollinearity is not a factor in the following regression analysis.

Table 4.3: Descriptive Statistics of Main Variables

Variables	N	mean	Std. Dev.	min	p25	Median	p75	max
Crash risk measures								
$NCSKEW_{i,t}$	6706	-0.558	0.880	-3.062	-1.104	-0.570	0.024	1.601
$DUVOL_{i,t}$	6706	-0.100	0.347	-0.909	-0.343	-0.106	0.147	0.697
Tax management measures								
$ETR_{i,t}$	6706	0.220	0.140	0.000	0.141	0.197	0.274	0.994
$LETR_{i,t}$	6706	0.212	0.123	0.000	0.144	0.194	0.266	0.991
$TS_{i,t}$	6706	-0.010	0.197	-0.864	-0.076	-0.004	0.060	0.829
$BTD_{i,t}$	6706	0.091	0.099	-0.058	0.031	0.063	0.115	0.609
$ETR_{i,t-1}$	4464	0.215	0.129	0.000	0.141	0.196	0.272	0.985
$LETR_{i,t-1}$	4464	0.210	0.118	0.000	0.142	0.194	0.265	0.985
$TS_{i,t-1}$	4464	0.000	0.195	-0.864	-0.066	0.002	0.066	0.829
$BTD_{i,t-1}$	4464	0.099	0.103	-0.058	0.036	0.070	0.126	0.609
Control variables								
$NCSKEW_{i,t-1}$	4464	-0.505	0.885	-3.062	-1.079	-0.522	0.108	1.601
$DTURN_{i,t-1}$	4464	0.309	0.209	0.034	0.151	0.253	0.416	0.988
$LEV_{i,t-1}$	4464	0.493	0.194	0.063	0.353	0.499	0.640	0.940
$MB_{i,t-1}$	4464	0.206	0.237	0.001	0.003	0.093	0.393	0.800
$ROA_{i,t-1}$	4464	0.054	0.045	-0.058	0.023	0.042	0.073	0.223
$SIZE_{i,t-1}$	4464	9.568	0.536	8.287	9.200	9.502	9.887	11.191
$SIGMA_{i,t-1}$	4464	0.064	0.021	0.028	0.049	0.061	0.076	0.124
$RET_{i,t-1}$	4464	0.002	0.012	-0.023	-0.007	0.000	0.008	0.031
$Discacc_{i,t-1}$	4464	0.151	0.140	0.002	0.055	0.117	0.210	0.853

The sample contains from 2008 to 2013 with non-missing values. P25 refers to percentile 25, and P75 refers to percentile 75. The variables are as defined in Table 4.2. Source: Computed by the authors

Table 4.4: Correlation Between Dependent Variables and Explanatory Variables

	ETR_t	ETR_{t-1}	$LETR_t$	$LETR_{t-1}$	$DTAX_t$	$DTAX_{t-1}$	BTD_t	BTD_{t-1}	$NCSKEW_{t-1}$
$NCSKEW_t$	0.01	-0.057***	-0.024*	-0.040***	0.037***	0.057***	0.035***	0.131***	-0.083***
$DUVOL_t$	0.046***	-0.043***	0.009	-0.030**	0.044***	0.063***	-0.030**	0.101***	-0.104***
	$DTURN_{t-1}$	LEV_{t-1}	MB_{t-1}	ROA_{t-1}	$SIZE_{t-1}$	$SIGMA_{t-1}$	RET_{t-1}	$Discacc_{t-1}$	
$NCSKEW_t$	0.102***	-0.015	0.008	0.131***	0.044***	0.013	0.241***	0.021	
$DUVOL_t$	0.104***	0	-0.088***	0.101***	0.092***	-0.182***	0.307***	-0.009	

Note: *, **, *** indicates significance at 10%, 5% and 1% respectively.
Variables are as defined in Table 4.2
Source: Computed by the author

Table 4.5: Correlation Between Independent and Control Variables

	ETR_t	ETR_{t-1}	$LETR_t$	$LETR_{t-1}$	$DTAX_t$	$DTAX_{t-1}$	BTD_t	BTD_{t-1}	$NCSKEW_{t-1}$	$DTURN_{t-1}$	LEV_{t-1}	MB_{t-1}
ETR_{t-1}	0.500***											
$LETR_t$	0.748***	0.778***										
$LETR_{t-1}$	0.441***	0.770***	0.812***									
$DTAX_t$	-0.046***	-0.050***	-0.001	0.000								
$DTAX_{t-1}$	0.015	-0.039***	-0.003	0.007	0.095***							
BTD_t	-0.147***	-0.121***	-0.110***	-0.103***	0.351***	-0.013						
BTD_{t-1}	-0.092***	-0.126***	-0.097***	-0.096***	-0.001	0.385***	0.560***					
$NCSKEW_{t-1}$	-0.022	-0.008	-0.038**	-0.038**	-0.089***	0.062***	-0.028*	0.039***				
$DTURN_{t-1}$	0.005	-0.018	-0.008	0.008	0.122***	-0.001	-0.092***	-0.164***	-0.226***			
LEV_{t-1}	0.204***	0.210***	0.259***	0.229***	-0.02	-0.037**	-0.230***	-0.222***	-0.059***	0.019		
MB_{t-1}	-0.037**	-0.012	-0.011	-0.001	-0.122***	-0.001	0.071***	0.188***	0.074***	-0.156***	-0.011	
ROA_{t-1}	-0.173***	-0.227***	-0.206***	-0.190***	0.020	0.233***	0.593***	0.792***	0.048***	-0.137***	-0.415***	0.055***
$SIZE_{t-1}$	0.154***	0.142***	0.193***	0.157***	-0.033**	0.071***	-0.067***	0.081***	-0.025*	-0.340***	0.386***	-0.006
$SIGMA_{t-1}$	-0.036**	-0.006	-0.004	0.030**	0.009	-0.003	0.031**	0.007	-0.081***	0.371***	0.065***	0.280***
RET_{t-1}	-0.024	-0.064***	-0.026*	-0.023	0.164***	-0.061***	0.164***	0.076***	-0.537***	0.436***	0.024	-0.069***
$Discacc_{t-1}$	0.027*	0.027*	0.043***	0.041***	-0.023	0.140***	0.026*	0.245***	0.005	-0.031**	0.194***	0.175***

	ROA_{t-1}	$SIZE_{t-1}$	$SIGMA_{t-1}$	RET_{t-1}
$SIZE_{t-1}$	-0.027*			
$SIGMA_{t-1}$	-0.044***	-0.221***		
RET_{t-1}	0.075***	-0.034**	0.000	
$Discacc_{t-1}$	-0.051***	0.135***	0.074***	0.008

Note: *, **, *** indicates significance at 10%, 5% and 1% respectively.
Variables are as defined in Table 4.2
Source: Computed by the author

4.5.2. Regression Results

Table 4.6 (Panel A and B) shows the empirical results of the ordinary least squares (OLS) regressions with $NCSKEW_{i,t}$ and $DUVOL_{i,t}$ as the dependent variables of crash risk, respectively. The independent variable of tax management is proxied by *ETR, LETR, DTAX,* and *BTD* in year *t* and *t-1*, respectively. Regressions also include the following control variables: $NCSKEW_{i,t-1}$, $DTURN_{i,t-1}$, $RET_{i,t-1}$, $SIGMA_{i,t-1}$, $SIZE_{i,t-1}$, $MB_{i,t-1}$, $LEV_{i,t-1}$, $ROA_{i,t-1}$, $Discacc_{i,t-1}$, with industry fixed effects and year fixed effects. Standard errors in parentheses are heteroskedasticity-robust and clustered at both firm level and year level.

Panel A of Table 4.6 shows the results of *NCSKEW* as the dependent variable of crash risk. In column (1) of Panel A, the coefficient of $ETR_{i,t-1}$ is highly significant at the 1% level with negative sign (-0.330 with *t*=-3.495), while the coefficient of $ETR_{i,t}$ is significant with positive sign (0.325 with *t*=3.300). Because a lower ETR represents a higher level of tax management, the results indicate that tax management in year *t* is negatively correlated with crash risk in year *t*, but tax management in year *t-1* is positively correlated with crash risk in year *t*. The coefficients associated with DTAX and BTD in year *t* under both models (columns (3) and (4) in Panel A of Table 4.6) are negative and highly significant at 1% level (-0.190 with t=-13.424, and -0.976 with t=-5.533, respectively), while the coefficients of the two proxies in year *t-1* are positive and highly significant (0.113 with t=2.139, and 0.592 with t=7.232, respectively). Since the higher BTD and DTAX represent a higher-level of tax management, the results in columns (3) and (4) of Panel A of Table 4.6 are consistent with the results shown in column (1). Therefore, the results in Panel A of Table 4.6 support Hypothesis 4.1 and Hypothesis 4.2, which means that corporate tax management is negatively associated with contemporaneous stock price crash risk, but positively associated with future stock price crashes.

Panel B of Table 4.6 reports the results of $DUVOL_{i,t}$ as an alternative measure of dependent variable, *Crash Risk*, which is used to test the robustness of the results. The results show that $DUVOL_{i,t}$ is significantly positive correlated with $ETR_{i,t}$ and $LETR_{i,t}$, but negatively correlated with $ETR_{i,t-1}$ and $LETR_{i,t-1}$ (columns (1) and (2) of Panel B). In addition, in columns (3) and (4) of Panel B, $DUVOL_{i,t}$ has significantly negative relationships with $DTAX_{i,t}$ and $BTD_{i,t}$, and a significantly positive relationship with $DTAX_{i,t-1}$ and $BTD_{i,t-1,}$. Therefore, the results of *DUVOL* as the dependent variable are in line with the results reported in Panel A of Table 4.6, suggesting that the results are robust to alternative measure of stock price crash risk. Thus, the findings support Hypothesis 4.1 and Hypothesis 4.2, indicating that firms with more tax management activities is less prone to crash in the current year but more crash prone in the future.

Therefore, the results support the bad news hoarding theory and agency theory. Corporate tax management activities can be used undesirably as a tool to conceal negative firms' news, such as adverse operating outcomes, manipulate management performance thereby producing reduced immediate crash risk. When these opportunistic short-term behavior is eventually uncovered, the result is future enterprise crash risk. Bad news can only be postponed, not eliminated.

Table 4.6: Corporate Tax Management and Stock Price Crash Risk (H4.1 and H4.2)

	(1) ETR	(2) LETR	(3) DTAX	(4) BTD
Panel A: Dependent variable: $NCSKEW_{i,t}$				
$ETR_{i,t}$	0.325***			
	(3.300)			
$ETR_{i,t-1}$	-0.330***			
	(-3.495)			
$LETR_{i,t}$		0.076		
		(0.676)		
$LETR_{i,t-1}$		-0.241**		
		(-2.454)		
$DTAX_{i,t}$			-0.190***	
			(-13.424)	
$DTAX_{i,t-1}$			0.113**	
			(2.139)	
$BTD_{i,t}$				-0.976***
				(-5.533)
$BTD_{i,t-1}$				0.592***
				(7.232)
$NCSKEW_{i,t-1}$	0.056*	0.055*	0.055*	0.056*
	(1.836)	(1.805)	(1.880)	(1.778)
$DTURN_{i,t-1}$	-0.170	-0.160	-0.177	-0.223*
	(-1.391)	(-1.333)	(-1.393)	(-1.840)
$RET_{i,t-1}$	16.827***	16.711***	17.507***	18.605***
	(2.833)	(2.783)	(2.961)	(3.150)
$SIGMA_{i,t-1}$	1.381	1.422	1.401	1.373
	(0.794)	(0.826)	(0.829)	(0.767)
$SIZE_{i,t-1}$	0.105*	0.109**	0.102*	0.082
	(1.941)	(2.058)	(1.795)	(1.527)
$MB_{i,t-1}$	-0.019	-0.020	-0.037	-0.050
	(-0.414)	(-0.457)	(-0.855)	(-1.016)
$LEV_{i,t-1}$	-0.039	-0.028	-0.036	-0.030
	(-0.487)	(-0.369)	(-0.412)	(-0.313)
$ROA_{i,t-1}$	1.634***	1.638***	1.555***	1.727***
	(5.083)	(5.067)	(4.923)	(3.698)
$Discacc_{i,t-1}$	0.062	0.063	0.038	-0.020
	(0.821)	(0.826)	(0.498)	(-0.309)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	-2.005***	-2.058***	-1.970***	-1.713**
	(-2.785)	(-2.877)	(-2.617)	(-2.365)
N	4464	4464	4464	4464
Adjusted R^2	0.223	0.221	0.222	0.227
Panel B: Dependent variable: $DUVOL_{i,t}$				
$ETR_{i,t}$	0.169***			
	(4.633)			
$ETR_{i,t-1}$	-0.139***			
	(-3.880)			
$LETR_{i,t}$		0.101**		
		(2.034)		
$LETR_{i,t-1}$		-0.115**		

Table 4.6: Continued

		(-2.511)		
$DTAX_{i,t}$			-0.067***	
			(-3.454)	
$DTAX_{i,t-1}$			0.051*	
			(1.924)	
$BTD_{i,t}$				-0.534***
				(-8.323)
$BTD_{i,t-1}$				0.234***
				(4.918)
$NCSKEW_{i,t-1}$	0.015	0.014	0.015	0.015
	(1.419)	(1.412)	(1.491)	(1.397)
$DTURN_{i,t-1}$	-0.062	-0.058	-0.063	-0.092
	(-1.010)	(-0.953)	(-0.999)	(-1.472)
$RET_{i,t-1}$	5.720***	5.656**	5.941***	6.783***
	(2.633)	(2.574)	(2.710)	(3.100)
$SIGMA_{i,t-1}$	0.737	0.763	0.753	0.750
	(1.504)	(1.561)	(1.574)	(1.444)
$SIZE_{i,t-1}$	0.053**	0.054**	0.052*	0.042
	(2.026)	(2.100)	(1.899)	(1.601)
$MB_{i,t-1}$	-0.017	-0.018	-0.024	-0.030*
	(-1.132)	(-1.201)	(-1.499)	(-1.762)
$LEV_{i,t-1}$	-0.042	-0.038	-0.039	-0.035
	(-1.523)	(-1.488)	(-1.349)	(-1.068)
$ROA_{i,t-1}$	0.335***	0.341***	0.289**	0.533**
	(2.890)	(3.110)	(2.374)	(2.445)
$Discacc_{i,t-1}$	-0.032	-0.031	-0.043	-0.059**
	(-1.170)	(-1.145)	(-1.416)	(-2.058)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	-0.993***	-1.013***	-0.984***	-0.849***
	(-3.134)	(-3.206)	(-2.953)	(-2.597)
N	4464	4464	4464	4464
Adjusted $_R^2$	0.341	0.338	0.339	0.351

Note:

1. All variables are defined in Table 4.2.
2. ***, ** and * are significance at 1%, 5% and 10% levels respectively.
3. t-values are in parentheses

Source: Computed by the author

According to the results of Table 4.6, corporate tax management would cause a high likelihood of future crash risk, thus to assess the impact of state ownership on the relationship between tax management and future stock price crashes (Hypotheses 4.3 a, b, and c), Eq. (4.5) is estimated. State ownership ($OWNER_{i,t-1}$) and the interaction term of $OWNER*TAX_{i,t-1}$ are included. To increase the power of the test, this chapter uses three dummy variables (*central, province,* and *muni*) for each level of state ownership, which represents Central SOEs, Provincial SOEs, and Municipal SOEs.

Table 4.7 reports the results of the impact of central government ownership on the relationship between tax management and future crash risk. The dependent variable is measured by *NCSKEW* and *DUVOL*, respectively in Panel A and B. The independent variable of tax management is proxied by *ETR, LETR, DTAX,* and *BTD*, respectively. The interaction terms, $Central*ETR_{i,t-1}$, $Central*LETR_{i,t-1}$, $Central*BTD_{i,t-1}$, and $Central*DTAX_{i,t-1}$ are employed. Moderator is central government ownership, denoted by $Central_{i,t-1}$. Regressions include the following control variables: $NCSKEW_{i,t-1}$, $DTURN_{i,t-1}$, $RET_{i,t-1}$, $SIGMA_{i,t-1}$, $SIZE_{i,t-1}$, $MB_{i,t-1}$, $LEV_{i,t-1}$, $ROA_{i,t-1}$, $Discacc_{i,t-1}$, with industry fixed effects and year fixed effects. Standard errors in parentheses are heteroskedasticity-robust and clustered at both firm and year levels.

As shown in Panel A of Table 4.7, with $NCSKEW_{i,t}$ as the dependent variable, after interaction terms included, tax management in year *t* is still negatively associated with crash risk in year *t*. Specifically, $ETR_{i,t}$ has a significantly positive coefficient, and $DTAX_{i,t}$ and $BTD_{i,t}$ have significantly negative coefficients. The results are consistent with H4.1. In addition, $ETR_{i,t-1}$ and $LETR_{i,t-1}$ have significantly negative coefficients, and $BTD_{i,t-1}$ has a significantly positive coefficient. Thus, corporate tax management is significantly positive correlated with future crash risk, which supports H4.2. Moreover, the coefficients of four interaction terms, that is, $Central*TAX_{i,t-1}$ ($Central*ETR_{i,t-1}$, $Central*LERT_{i,t-1}$,

*Central*DTAX*$_{i,t-1}$, and *Central*BTD*$_{i,t-1}$), are not statistically significant. Therefore, Hypothesis 4.3a has been rejected.

Panel B of Table 4.7 presents the results when crash risk is proxied by *DUVOL*$_{i,t}$, which the coefficients of both two main effect terms (*Tax Management*$_{i,t}$ and *Tax Management*$_{i,t-1}$) are highly significant with expected signs, except that only *DTAX*$_{i,t-1}$ is the coefficient insignificant. In addition, the coefficients of four interaction terms in Panel B of Table 4.7, *Central*ETR*$_{i,t-1}$, *Central*LERT*$_{i,t-1}$, *Central*DTAX*$_{i,t-1}$, *Central*BTD*$_{i,t-1}$ are also not shown statistically significant. Hence, the results reported in Panel A and Panel B of Table 4.7 suggest that the central government control would not influence future stock price crash risk, H4.3a has been rejected.

Table 4.7: The Impact of Central Government Ownership on the Relationship Between Tax Management and Future Stock Price Crash Risk. (H4.3a)

	(1) ETR	(2) LETR	(3) DTAX	(4) BTD
Panel A: Dependent variable: $NCSKEW_{i,t}$				
$ETR_{i,t}$	0.325***			
	(3.292)			
$ETR_{i,t-1}$	-0.309***			
	(-3.033)			
$Central*ETR_{i,t-1}$	-0.096			
	(-0.635)			
$LETR_{i,t}$		0.076		
		(0.647)		
$LETR_{i,t-1}$		-0.284**		
		(-2.560)		
$Central*LETR_{i,t-1}$		0.269		
		(1.150)		
$DTAX_{i,t}$			-0.190***	
			(-15.210)	
$DTAX_{i,t-1}$			0.075	
			(1.035)	
$Central*DTAX_{i,t-1}$			0.269	
			(1.269)	
$BTD_{i,t}$				-0.966***
				(-5.383)
$BTD_{i,t-1}$				0.585***
				(6.283)
$Central*BTD_{i,t-1}$				0.131
				(0.261)
$Central_{i,t-1}$	0.059	-0.016	0.039	0.024
	(0.965)	(-0.215)	(1.163)	(0.353)
$NCSKEW_{i,t-1}$	0.056*	0.055*	0.055*	0.056*
	(1.816)	(1.790)	(1.873)	(1.781)
$DTURN_{i,t-1}$	-0.166	-0.162	-0.175	-0.221*
	(-1.377)	(-1.396)	(-1.402)	(-1.842)
$RET_{i,t-1}$	16.837***	16.826***	17.509***	18.588***
	(2.838)	(2.802)	(2.969)	(3.169)
$SIGMA_{i,t-1}$	1.300	1.356	1.331	1.307
	(0.727)	(0.761)	(0.781)	(0.709)
$SIZE_{i,t-1}$	0.100*	0.103*	0.097	0.078
	(1.779)	(1.866)	(1.636)	(1.363)
$MB_{i,t-1}$	-0.016	-0.020	-0.036	-0.048
	(-0.345)	(-0.436)	(-0.845)	(-0.980)
$LEV_{i,t-1}$	-0.037	-0.021	-0.037	-0.027
	(-0.462)	(-0.272)	(-0.422)	(-0.288)
$ROA_{i,t-1}$	1.668***	1.668***	1.592***	1.728***
	(5.062)	(5.024)	(4.893)	(3.648)
$Discacc_{i,t-1}$	0.066	0.066	0.050	-0.018
	(0.871)	(0.868)	(0.623)	(-0.284)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	-1.966***	-1.996***	-1.926**	-1.675**
	(-2.665)	(-2.745)	(-2.496)	(-2.236)
N	4464	4464	4464	4464

Table 4.7: Continued

Adjusted R^2	0.223	0.221	0.223	0.227
Panel B. Dependent variable: $DUVOL_{i,t}$				
$ETR_{i,t}$	0.169***			
	(4.628)			
$ETR_{i,t-1}$	-0.133***			
	(-3.513)			
$Central*ETR_{i,t-1}$	-0.030			
	(-0.799)			
$LETR_{i,t}$		0.101**		
		(1.998)		
$LETR_{i,t-1}$		-0.129**		
		(-2.268)		
$Central*LETR_{i,t-1}$		0.084		
		(1.424)		
$DTAX_{i,t}$			-0.067***	
			(-3.438)	
$DTAX_{i,t-1}$			0.040	
			(1.123)	
$Central*DTAX_{i,t-1}$			0.070	
			(0.829)	
$BTD_{i,t}$				-0.531***
				(-8.254)
$BTD_{i,t-1}$				0.230***
				(4.135)
$Central*BTD_{i,t-1}$				0.053
				(0.380)
$Central_{i,t-1}$	0.021	-0.003	0.015*	0.007
	(1.446)	(-0.125)	(1.755)	(0.415)
$NCSKEW_{i,t-1}$	0.015	0.014	0.014	0.015
	(1.408)	(1.413)	(1.488)	(1.397)
$DTURN_{i,t-1}$	-0.060	-0.058	-0.062	-0.091
	(-0.995)	(-0.973)	(-0.997)	(-1.476)
$RET_{i,t-1}$	5.725***	5.694***	5.945***	6.777***
	(2.638)	(2.599)	(2.722)	(3.110)
$SIGMA_{i,t-1}$	0.707	0.737	0.726	0.728
	(1.434)	(1.484)	(1.533)	(1.385)
$SIZE_{i,t-1}$	0.051*	0.052**	0.050*	0.040
	(1.933)	(1.985)	(1.809)	(1.507)
$MB_{i,t-1}$	-0.016	-0.018	-0.023	-0.029*
	(-1.076)	(-1.167)	(-1.473)	(-1.762)
$LEV_{i,t-1}$	-0.041	-0.035	-0.039	-0.034
	(-1.481)	(-1.400)	(-1.298)	(-1.046)
$ROA_{i,t-1}$	0.347***	0.353***	0.302**	0.533**
	(3.077)	(3.260)	(2.546)	(2.471)
$Discacc_{i,t-1}$	-0.031	-0.030	-0.039	-0.059**
	(-1.136)	(-1.107)	(-1.223)	(-2.018)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	-0.978***	-0.991***	-0.967***	-0.836**
	(-3.056)	(-3.110)	(-2.876)	(-2.515)
N	4464	4464	4464	4464

Table 4.7: Continued

Adjusted R^2	0.341	0.338	0.339	0.351

Note:
1. All variables are defined in Table 4.2.
2. ***, ** and * are significance at 1%, 5% and 10% levels respectively.
3. t-values are in parentheses

Source: Computed by the authors

Table 4.8 presents the results of the moderating effect of provincial government ownership on the relationship between tax management and future crash risk. Panel A and B show the results with $NCSKEW_{i,t}$ and $DUVOL_{i,t}$ as the dependent variables, respectively. The independent variable of tax management is proxied by *ETR, LETR, DTAX*, and *BTD*, respectively. Moderator is $Provincial_{i,t-1}$. Four interaction terms, $Provincial*ETR_{i,t-1}$, $Provincial*LETR_{i,t-1}$, $Provincial*BTD_{i,t-1}$, and $Provincial*DTAX_{i,t-1}$ are employed. Regressions include the following control variables: $NCSKEW_{i,t-1}$, $DTURN_{i,t-1}$, $RET_{i,t-1}$, $SIGMA_{i,t-1}$, $SIZE_{i,t-1}$, $MB_{i,t-1}$, $LEV_{i,t-1}$, $ROA_{i,t-1}$, $Discacc_{i,t-1}$, with industry fixed effects and year fixed effects. Standard errors in parentheses are heteroskedasticity-robust and clustered at both firm and year levels.

The results show that corporate tax management has a significantly negative relationship with contemporaneous crash risk, and positive relationship with future crash risk, which support H4.1 and H4.2 again. In addition, the coefficients of the four interaction terms ($Provincial*ETR_{i,t-1}$, $Provincial*LETR_{i,t-1}$, $Provincial*DTAX_{i,t-1}$, *and* $Provincial*BTD_{i,t-1}$) in Panel A and B of Table 4.8 are not statistically significant, except that only $Province*LETR_{i,t-1}$ is significantly positive at 10% in Panel B of Table 4.8. Therefore, the results suggest that the provincial government control would not statistically influence the relationship between tax management and future stock price crash risk. Thus, the results of Table 4.8 reject H4.3b.

The results of Table 4.7 and Table 4.8 reject Hypothesis 3a. Therefore, the firms controlled by central and provincial government would not impact the positive correlation between tax management and future risk of stock price crashing. For non-financial SOEs, government control is exercised mostly through ensuring compliance with government policies and strategies. Control is not extended to day-to-day management (Ran & Cheok, 2016). Hence, tax management is generally left in the hands of SOE management.

Table 4.8: The Impact of Provincial Government Ownership on The Relationship Between Tax Management and Future Stock Price Crash Risk. (H 4.3b)

	(1) ETR	(2) LETR	(3) DTAX	(4) BTD
Panel A: Dependent variable: $NCSKEW_{i,t}$				
$ETR_{i,t}$	0.318***			
	(3.289)			
$ETR_{i,t-1}$	-0.376***			
	(-4.022)			
Provincial*$ETR_{i,t-1}$	0.221			
	(1.643)			
$LETR_{i,t}$		0.062		
		(0.572)		
$LETR_{i,t-1}$		-0.290**		
		(-2.470)		
Provincial*$LETR_{i,t-1}$		0.269		
		(1.476)		
$DTAX_{i,t}$			-0.186***	
			(-18.585)	
$DTAX_{i,t-1}$			0.107*	
			(1.869)	
Provincial*$DTAX_{i,t-1}$			0.037	
			(0.232)	
$BTD_{i,t}$				-0.974***
				(-5.567)
$BTD_{i,t-1}$				0.623***
				(7.487)
Provincial*$BTD_{i,t-1}$				-0.087
				(-0.248)
$Provincial_{i,t-1}$	-0.098**	-0.109**	-0.048*	-0.042
	(-2.143)	(-2.308)	(-1.684)	(-1.458)
$NCSKEW_{i,t-1}$	0.054*	0.053*	0.054*	0.055*
	(1.825)	(1.785)	(1.875)	(1.763)
$DTURN_{i,t-1}$	-0.169	-0.157	-0.179	-0.226*
	(-1.374)	(-1.323)	(-1.399)	(-1.859)

Table 4.8: Continued

$RET_{i,t-1}$	16.597***	16.488***	17.356***	18.417***
	(2.811)	(2.757)	(2.968)	(3.139)
$SIGMA_{i,t-1}$	1.383	1.402	1.427	1.414
	(0.803)	(0.829)	(0.835)	(0.787)
$SIZE_{i,t-1}$	0.113**	0.118**	0.109**	0.089*
	(2.148)	(2.265)	(1.982)	(1.749)
$MB_{i,t-1}$	-0.018	-0.019	-0.036	-0.049
	(-0.392)	(-0.442)	(-0.869)	(-1.006)
$LEV_{i,t-1}$	-0.048	-0.038	-0.042	-0.036
	(-0.596)	(-0.499)	(-0.473)	(-0.382)
$ROA_{i,t-1}$	1.606***	1.612***	1.538***	1.686***
	(5.229)	(5.180)	(5.037)	(4.056)
$Discacc_{i,t-1}$	0.066	0.069	0.040	-0.020
	(0.869)	(0.890)	(0.516)	(-0.299)
Industy effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	-2.059***	-2.109***	-2.022***	-1.7735***
	(-3.276)	(-3.368)	(-3.074)	(-2.755)
N	4464	4464	4464	4464
Adjusted R^2	0.223	0.221	0.222	0.227
Panel B. Dependent variable: $DUVOL_{i,t}$				
$ETR_{i,t}$	0.167***			
	(4.591)			
$ETR_{i,t-1}$	-0.151***			
	(-4.309)			
$Provincial*ETR_{i,t-1}$	0.057			
	(1.135)			
$LETR_{i,t}$		0.095*		
		(1.895)		
$LETR_{i,t-1}$		-0.139***		
		(-3.284)		
$Provincial*LETR_{i,t-1}$		0.128*		
		(1.879)		
$DTAX_{i,t}$			-0.066***	
			(-3.447)	
$DTAX_{i,t-1}$			0.046**	
			(2.041)	
$Provincial*DTAX_{i,t-1}$			0.025	
			(0.436)	
$BTD_{i,t}$				-0.533***
				(-8.294)
$BTD_{i,t-1}$				0.250***
				(4.537)
$Provincial*BTD_{i,t-1}$				-0.049
				(-0.465)
$Provincial_{i,t-1}$	-0.029**	-0.046**	-0.017**	-0.013**
	(-2.054)	(-2.434)	(-2.333)	(-2.106)
$NCSKEW_{i,t-1}$	0.014	0.014	0.014	0.015

Table 4.8: Continued

	(1.384)	(1.340)	(1.478)	(1.377)
$DTURN_{i,t-1}$	-0.062	-0.056	-0.064	-0.092
	(-1.006)	(-0.937)	(-1.005)	(-1.489)
$RET_{i,t-1}$	5.647***	5.570**	5.892***	6.714***
	(2.602)	(2.528)	(2.722)	(3.086)
$SIGMA_{i,t-1}$	0.741	0.749	0.760	0.766
	(1.504)	(1.546)	(1.537)	(1.449)
$SIZE_{i,t-1}$	0.056**	0.058**	0.055**	0.044*
	(2.124)	(2.229)	(1.990)	(1.717)
$MB_{i,t-1}$	-0.017	-0.018	-0.024	-0.030*
	(-1.116)	(-1.202)	(-1.556)	(-1.758)
$LEV_{i,t-1}$	-0.044	-0.042	-0.041	-0.037
	(-1.567)	(-1.540)	(-1.393)	(-1.119)
$ROA_{i,t-1}$	0.326***	0.331***	0.283**	0.515**
	(2.817)	(2.994)	(2.344)	(2.470)
$Discacc_{i,t-1}$	-0.031	-0.029	-0.042	-0.060**
	(-1.113)	(-1.029)	(-1.396)	(-2.064)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	-1.011***	-1.031***	-1.002***	-0.872***
	(-3.595)	(-3.655)	(-3.380)	(-2.885)
N	4464	4464	4464	4464
Adjusted R^2	0.341	0.338	0.339	0.351

Note:
1. All variables are defined in Table 4.2.
2. ***, ** and * are significance at 1%, 5% and 10% levels respectively.
3. t-values are in parentheses

Source: Computed by the author

Table 4.9 presents the results of the moderating impact of municipal government ownership on the relationship between tax management and stock price crash risk. The dependent variable of stock price crash risk is measured by *NCSKEW* and *DUVOL*, respectively in Panel A and Panel B. The independent variable of tax management is measured by *ETR, LETR, DTAX,* and *BTD*, separately. The moderator is $Muni_{i,t-1}$. There are four interaction terms: $Muni*ETR_{i,t-1}$, $Muni*LETR_{i,t-1}$, $Muni*BTD_{i,t-1}$, and $Muni*DTAX_{i,t-1}$. Control variables include $NCSKEW_{i,t-1}$, $DTURN_{i,t-1}$, $RET_{i,t-1}$, $SIGMA_{i,t-1}$, $SIZE_{i,t-1}$, $MB_{i,t-1}$, $LEV_{i,t-1}$, $ROA_{i,t-1}$, $Discacc_{i,t-1}$, with industry fixed effects and year fixed effects. Standard errors in parentheses are heteroskedasticity-robust and clustered at the

firm and time level.

As reported in Panel A of Table 4.9, when $NCSKEW_{i,t}$ is used as the dependent variable, the results of the relationship between tax management and stock price crashes again support H4.1 and H4.2. Moreover, the coefficients of the interaction terms $Muni*ETR_{i,t-1}$, $Muni*LETR_{i,t-1}$, $Muni*BTD_{i,t-1}$, and $Muni*DTAX_{i,t-1}$ are statistically significant with expected signs in all cases, except that only in one out of four cases is the coefficient of the interaction term ($Muni*LETR_{i,t-1}$) insignificant. Hence, the results indicate that municipal listed SOEs would have a higher probability of future stock price crashes, supporting Hypothesis 4.3c.

Panel B of Table 4.9 shows the regression results when the dependent variable of stock price crashes is measured by $DUVOL_{i,t}$. The results show that all the coefficients of the interaction terms are statistically significant with expected signs, except that only $Muni*ETR_{i,t-1}$ in column (1) is the coefficient insignificant. As for Panel B, the results presented in Table 4.9 also lend support to H4.3c, which means that municipal government ownership would strengthen the positive relationship between corporate tax management and future stock price crash risk. Thus, the listed enterprises controlled by municipal government would have a higher likelihood of future crash risk because of corporate tax management.

Table 4.9: The Impact of Municipal Government Ownership on The Relationship Between Tax Management and Future Stock Price Crash Risk. (H4.3c)

	(1) ETR	(2) LETR	(3) DTAX	(4) BTD
Panel A: Dependent variable: $NCSKEW_{i,t}$				
$ETR_{i,t}$	0.328***			
	(3.293)			
$ETR_{i,t-1}$	-0.279**			
	(-2.329)			
$Muni*ETR_{i,t-1}$	-0.229*			
	(-1.771)			
$LETR_{i,t}$		0.077		
		(0.661)		
$LETR_{i,t-1}$		-0.196*		
		(-1.746)		
$Muni*LETR_{i,t-1}$		-0.179		
		(-0.919)		
$DTAX_{i,t}$			-0.193***	
			(-19.713)	
$DTAX_{i,t-1}$			0.069	
			(1.266)	
$Muni*DTAX_{i,t-1}$			0.297*	
			(1.849)	
$BTD_{i,t}$				-0.995***
				(-5.836)
$BTD_{i,t-1}$				0.480***
				(3.813)
$Muni*BTD_{i,t-1}$				0.772**
				(2.087)
$Muni_{i,t-1}$	0.030	0.021	-0.021	-0.090*
	(0.870)	(0.740)	(-1.064)	(-1.799)
$NCSKEW_{i,t-1}$	0.056*	0.055*	0.056*	0.057*
	(1.832)	(1.807)	(1.915)	(1.775)
$DTURN_{i,t-1}$	-0.169	-0.158	-0.175	-0.221*
	(-1.379)	(-1.308)	(-1.403)	(-1.835)
$RET_{i,t-1}$	16.896***	16.779***	17.564***	18.759***
	(2.832)	(2.776)	(2.957)	(3.097)
$SIGMA_{i,t-1}$	1.306	1.347	1.363	1.382
	(0.769)	(0.808)	(0.832)	(0.799)
$SIZE_{i,t-1}$	0.103*	0.108**	0.101*	0.079
	(1.926)	(2.075)	(1.807)	(1.507)
$MB_{i,t-1}$	-0.022	-0.023	-0.042	-0.053
	(-0.495)	(-0.522)	(-1.001)	(-1.070)
$LEV_{i,t-1}$	-0.034	-0.024	-0.033	-0.026
	(-0.410)	(-0.303)	(-0.363)	(-0.272)
$ROA_{i,t-1}$	1.642***	1.645***	1.555***	1.691***
	(5.021)	(4.994)	(4.855)	(3.546)

Table 4.9: Continued

$Discacc_{i,t-1}$	0.064	0.064	0.044	-0.014
	(0.843)	(0.844)	(0.606)	(-0.217)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	-1.990***	-2.041***	-1.961***	-1.667**
	(-2.777)	(-2.886)	(-2.631)	(-2.356)
N	4464	4464	4464	4464
Adjusted R^2	0.223	0.221	0.223	0.228
Panel B. Dependent variable: $DUVOL_{i,t}$				
$ETR_{i.t}$	0.170***			
	(4.622)			
$ETR_{i,t-1}$	-0.136***			
	(-3.175)			
$Muni*ETR_{i,t-1}$	-0.017			
	(-0.526)			
$LETR_{i,t}$		0.101**		
		(2.034）		
$LETR_{i,t-1}$		-0.107**		
		(-2.484)		
$Muni*LETR_{i,t-1}$		-0.034*		
		(-1.688)		
$DTAX_{i,t}$			-0.068***	
			(-3.615)	
$DTAX_{i,t-1}$			0.034	
			(1.398)	
$Muni*DTAX_{i,t-1}$			0.111*	
			(1.819)	
$BTD_{i,t}$				-0.541***
				(-8.786)
$BTD_{i,t-1}$				0.191***
				(3.465)
$Muni*BTD_{i,t-1}$				0.296**
				(2.097)
$Muni_{i,t-1}$	-0.002	0.003	-0.005	-0.031**
	(-0.110)	(0.455)	(-0.471)	(-2.020)
$NCSKEW_{i,t-1}$	0.015	0.014	0.015	0.016
	(1.416)	(1.412)	(1.527)	(1.407)
$DTURN_{i,t-1}$	-0.061	-0.057	-0.063	-0.091
	(-1.016)	(-0.955)	(-1.023)	(-1.494)
$RET_{i,t-1}$	5.734***	5.671**	5.954***	6.834***
	(2.628)	(2.569)	(2.712)	(3.046)
$SIGMA_{i,t-1}$	0.721	0.747	0.748	0.763
	(1.486)	(1.553)	(1.610)	(1.484)
$SIZE_{i,t-1}$	0.052**	0.054**	0.052*	0.041

Table 4.9: Continued

	(2.009)	(2.078)	(1.892)	(1.577)
$MB_{i,t-1}$	-0.018	-0.019	-0.025	-0.031*
	(-1.141)	(-1.186)	(-1.583)	(-1.721)
$LEV_{i,t-1}$	-0.041	-0.037	-0.038	-0.034
	(-1.466)	(-1.437)	(-1.307)	(-1.049)
$ROA_{i,t-1}$	0.335***	0.342***	0.289**	0.519**
	(2.870)	(3.099)	(2.386)	(2.387)
$Discacc_{i,t-1}$	-0.032	-0.031	-0.040	-0.057*
	(-1.164)	(-1.134)	(-1.392)	(-1.898)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
Constant	-0.989***	-1.010***	-0.982***	-0.834**
	(-3.104)	(-3.174)	(-2.939)	(-2.567)
N	4464	4464	4464	4464
Adjusted R^2	0.341	0.338	0.339	0.352

Note:
1. All variables are defined in Table 4.2.
2. ***, ** and * are significance at 1%, 5% and 10% levels respectively.
3. t-values are in parentheses

Source: Computed by the author

4.5.3. Robustness Checks: Endogeneity Issue

Although this chapter controls for firm characteristics and accounting properties variables in the regressions, the results may still be biased if the explanatory variables are not strictly exogenous and the panel's time dimension is small (Wintoki, Linck, & Netter, 2012). Hence, the endogeneity issue would lead to the regression results having spurious correlation between corporate tax management and crash risk. To obtain reliable and unbiased results, this chapter implements a dynamic system Generalized Method of Moments (system GMM) estimator to reexamine for Eq. (4.4).

Table 4.10 reports the results of the system-GMM, when the dependent variable is measured by $NCSKEW_{i,t}$. The system GMM model in this section is estimated with Windmeijer (2005) corrected robust standard errors shown in parentheses. Then, the table

also reports the p-values for four additional specification tests. *AR (1)* and *AR (2)* are tests for first order and second order serial correlation in the first-differenced residuals, under the null of no serial correlation. The results of AR tests suggest that the underlying conditional errors are not autocorrelated, where the *AR (1)* tests are shown to be significant, and the *AR (2)* tests are shown to be non-significant with p-value between 0.131 and 0.275. The Sargan and Hansen *J* tests of over-identification has a null hypothesis of the instruments as a group is exogenous. The difference in Hansen test of exogeneity has a null hypothesis that the levels of instruments in the GMM and the IV are exogenous. The results of the Hansen *J* test of over-identifying restrictions are non-significant (the p-values of Hansen test between 0.190 and 0.226), which cannot reject the null hypothesis that these instruments are exogenous. Thus, endogeneity is not an important concern in the approach used here.

The results of system GMM (shown in Table 4.10) are in line with the results of Table 4.6, suggesting that manipulative tax management can be used undesirably as a tool to conceal adverse information and manipulate performance for an extended period, which shows a negative relationship between tax management and contemporaneous stock price crash risk. However, it in turn ultimately causes a possibility of future crash risk.

Table 4.10: The Impact of Tax Management on Stock Price Crash Risk Using System GMM

	(1) ETR	(2) LETR	(3) DTAX	(4) BTD
Panel A: Dependent variable: *NCSKEW$_{i,t}$*				
$ETR_{i,t}$	0.244**			
	(2.106)			
$ETR_{i,t-1}$	-0.404***			
	(-3.207)			
$LETR_{i,t}$		-0.050		
		(-0.217)		
$LETR_{i,t-1}$		-0.316*		
		(-1.657)		
$DTAX_{i,t}$			-0.205***	
			(-2.701)	
$DTAX_{i,t-1}$			0.264***	
			(2.823)	
$BTD_{i,t}$				-0.498**
				(-2.274)
$BTD_{i,t-1}$				2.252***
				(4.204)
$NCSKEW_{i,t-1}$	0.118***	0.120***	0.121***	0.107***
	(3.986)	(4.020)	(4.082)	(3.630)
$DTURN_{i,t-1}$	-0.227**	-0.209*	-0.263**	-0.232**
	(-1.999)	(-1.847)	(-2.281)	(-2.065)
$RET_{i,t-1}$	29.211***	29.269***	30.400***	27.943***
	(9.172)	(9.182)	(9.387)	(8.731)
$SIGMA_{i,t-1}$	6.705***	6.644***	6.843***	6.462***
	(4.465)	(4.422)	(4.557)	(4.235)
$SIZE_{i,t-1}$	0.219***	0.225***	0.207***	0.170***
	(6.811)	(7.076)	(6.440)	(5.443)
$MB_{i,t-1}$	-0.183	-0.175	-0.189	-0.271*
	(-1.295)	(-1.251)	(-1.356)	(-1.820)
$LEV_{i,t-1}$	-0.390***	-0.364***	-0.411***	-0.382***
	(-3.402)	(-3.216)	(-3.525)	(-3.465)
$ROA_{i,t-1}$	-1.537*	-1.401*	-1.956**	-4.590***
	(-1.833)	(-1.723)	(-2.222)	(-3.012)
$Discacc_{i,t-1}$	-0.039	-0.039	-0.123	-0.515***
	(-0.307)	(-0.307)	(-0.914)	(-3.291)
Industry effect	Yes	Yes	Yes	Yes
Year effect	Yes	Yes	Yes	Yes
constant	-2.985***	-3.316***	-3.095***	-2.648***
	(-9.316)	(-9.838)	(-8.973)	(-7.444)
N	4464	4464	4464	4464
AR (1) test	0.000	0.000	0.000	0.000
AR (2) test	0.165	0.142	0.131	0.275
Sargan test	0.173	0.158	0.148	0.128
Hansen test	0.226	0.222	0.225	0.190
Difference in Hansen	0.197	0.172	0.162	0.179

Table 4.10: Continued

Note:
1. All variables are defined in Table 4.2.
2. ***, ** and * are significance at 1%, 5% and 10% levels respectively.
3. t-values are in parentheses

Source: Computed by the authors

4.6. Chapter Summary

Based on the data from China's A-share listed companies during 2008 to 2013, this chapter examined the market consequences of corporate tax management though investors' current perceptions of corporate tax management and future extreme market outcomes. Given the China-specific characteristics of state-owned/controlled shareholding, this chapter further explored the role of government control on the relationship between corporate tax management and future stock price crash risk.

Firstly, this chapter finds that there is a negative relationship between corporate tax management and contemporaneous stock price crash risk, which supports the contention that corporate tax management can be used to conceal adverse operating outcomes and manipulate management performance, which reduces immediate crash risk. However, these opportunist short-term behaviors would ultimately increase the future probability of corporate stock price crashes, so that the relationship is reversed with the passage of time. This result is consistent with the results of Kim, Li, and Zhang (2011), who showed that the accumulation of bad news hidden from view through tax management would increase the likelihood of future crash risk. Furthermore, the chapter also finds that central and provincial listed state-owned/controlled enterprises cannot statistically mitigate the positive relationship between tax management and future crash risk, while municipal listed SOEs have a higher probability of future stock price crash.

Two caveats need to be noted in this conclusion. First, the sample consists primarily of A-share listed SOEs, of which government is the ultimate controller. Accordingly, the results may not be generalized to wholly state-owned enterprises. Second, even if SOEs are found to have a high probability of stock price crash, the reality is that the government, with its substantial financial resources, is unlikely to let its enterprises fail, especially for central or provincial SOEs. But keeping them afloat implies the wasteful use of public resources.

Thus, the results of this chapter point to the need for action at two levels. At the level of the firms, they should strengthen their internal supervision and management ability for optimal decision-making in tax planning activities. Having said this, it must be stated that tax management is not synonymous with concealment. There are legitimate reasons for tax management. However, to the extent that it affords opportunities for managers' short-term bias, it is important for firms to be careful with the potential risk that managers will behave in a way that might harm the future interests of the enterprises. And at the level of government, the current tax system in China is complicated and opaque, which gives managers opportunities to undertake aggressive tax management and harms government tax revenues and raises the cost of ensuring compliance. The State Administration of Taxation Department should strengthen its external supervision and inspection ability to reduce the possibility of illegal tax activities to protect the national interests. In addition, policymakers should enact effective tax laws to create fair competition.

CHAPTER 5: HOW DOES CORRUPTION AND MARKETIZATION AFFECT CORPORATE TAX MANAGEMENT AND FIRM PERFORMANCE

5.1. Introduction

Although it is extremely difficult to measure corruption as only those convicted are figured in statistics which may or may not be reflected in perceptions, the Corruption Perceptions Index (CPI) constructed by Transparency International ranked China as the 79th most corrupt nation among 175 countries in 2016[13]. Regardless of its veracity, corruption is a major social problem in contemporary China. Following the large-scale crackdown on corruption in the past few years this topic has moved to the forefront among topics of concern and has attracted considerable attention among researchers (Jiang & Nie, 2014; Liu, 2016; Wang & You, 2012; Xu & Yano, 2016).

However, the question of how corruption influences economic activities is contested. On the one hand, some researchers support the conventional view that corruption of government acts as a "grabbing hand", creating costs for economic activities and distorts resource allocation, thereby negatively affecting long-run economic activities. On the other hand, other researchers argue that if a country suffers poor governance and heavy regulation, a bribing mechanism actually facilitates the successful completion of economic transactions, and hence, can be viewed as a "helping hand" (see Jiang and Nie (2014) for both arguments). These contrasting conjectures suggest that the relationship between corruption and economic activities may vary in that both theoretical arguments

[13] Source from http://www.transparency.org/news/feature/corruption_perceptions_index_2016

may also be compatible with different levels of corruption.

How does corruption affect business? It does so through its impact on determinants of firm performance. One such determinant is tax management. Using cross-country survey data, Alm, Martinez-Vazquez, and McClellan (2016) found corruption by tax officials affects firms' tax reporting decisions resulting in an understatement of sales reported to tax authorities. Under-reporting of tax liability is part and parcel of tax management, defined as efforts to minimize a firm's tax burden at any time. Although a large body of theoretical and empirical research on corruption and tax management separately has emerged, the relationship between the two issues has remained a largely unexplored area.

With the increased focus on corruption, researchers have also started to consider the role of the institutional environment in moderating the impact of corruption. For instance, using cross-country data, Heckelman and Powell (2010) found that improvements in the institutional environment changed the impact of corruption on growth.

For China, neither the corruption-tax management link nor the role of institutional environment has seen much research. Yet, both issues are particularly salient because China's tax system has undergone considerable reforms over the last three decades, but a well-developed legal framework to stem corruption is not yet in place, thereby allowing enterprises to pursue aggressive tax avoidance to reduce tax costs. From the enterprise perspective, managers can bribe to obtain tax preferences and evade legal restrictions. In the interest of decentralization, China has also implemented in 1994 a tax sharing system that offers opportunities for local officials to pursue new rent-seeking opportunities. This has added to the complexity of efforts to analyze the impact of corruption on tax management.

At the same time, China has undergone a progressive but dramatic economic transformation from a centrally planned to a market-oriented economy in the space of just over three decades. While, by the marketization argument, a reduction in corruption should be expected, many commentators believe that corruption is still rife in China (Dong & Torgler, 2013; Foo, Wu, & Chin, 2014; You & Nie, 2017).

The above paradoxes provide the rationale for this Chapter, which, as a complement to Chapters 3 and 4, can offer further insight into the opaque world of tax management. Thus, this chapter will answer the third research question of this thesis. The following sub-questions are addressed. First, what are the effects of corruption on corporate tax management? Second, how does marketization moderate the relationship between corruption and tax management? Finally, how does corruption affect the relationship between tax management and firm performance? In other words, how does corruption's impact on tax management translate into impact on firm performance?

The rest of this chapter is organized as follows: Section 5.2 reviews the previous research and describes the research hypotheses. Section 5.3 presents research methodology including the sample details, variables, and model descriptions. Section 5.4 discusses the empirical results addressing the above questions. Section 5.5 concludes the chapter by drawing policy implications.

5.2. Literature Review and Hypotheses Development

Businessmen typically understand corruption as government bureaucrats abusing their public power to sell government property, influence or circumvent government regulation for private gain (Jiang & Nie, 2014; Ngo, 2008; Petrou & Thanos, 2014).

From a theoretical perspective, rational choice theory characterizes an individual being rational and self-interested, and pursuing value-oriented activities (Scott, 2000). Hence, as rational individuals, firms pay bribes to government officials when they deem their benefits reaped from bribes to be higher than their costs. The costs of firms providing bribes have at least two parts: bribe-related payments and potential risks of detection and punishment once caught. On this basis, the impact of corruption on tax management may be non-linear, but instead supports two opposite theoretical views of corruption, the "helping hand" view and "grabbing hand" view. On the view of "helping hand", firms can make more profits by paying a bribe premium (Jiang & Nie, 2014; Petrou & Thanos, 2014; You & Nie, 2017), whereas the "grabbing hand" saddles firms with higher costs.

In the China context, several developments have heightened the likelihood of corruption. First, under fiscal decentralization, the Chinese central government granted more autonomy and authority to local governments to give local officials more discretionary power. Since the tax-sharing reform in 1994, China has started to adopt a dual system of tax collection and administration, and the revenue from corporate taxation is shared by central and local governments, with the central government's share being 60%[14]. Under the current taxation system, local governments, especially local taxation bureaus, have been granted more taxing authority, giving local officials more opportunities to seek bribery (Ngo, 2008).

Second, in the Chinese economy with extensive government intervention, markets have become more relationship-based (*guanxi*) rather than rule-based (Martinsons, 2005), leading to corruption being viewed as "normal" behavior (Jain, 2001). Thus, firms are apt to bribe their local government officials to obtain extra economic advantage such as direct

[14] The State Administration of Taxation (SAT) is responsible for the collection of corporate tax of central-SOEs. Local governments are responsible for collecting the corporate tax from local SOEs and all other non-SOEs, and then transfer the 60% revenue collected to the central government.

subsidies tax benefits, tax breaks or tax reduction, and grants (Ngo, 2008).

On the opposite view of "grabbing hand", firms operating in an environment with widespread and rampant corruption have to expend more financial and human resources to seek rent via corruption. At the same time, they also have to bear uncertainty risks from engaging in corruption that can result in penalties if caught engaging in corrupt practices (Jain, 2001), which then reduces income. In this case, covert bribing system acts as a "grabbing hand", where the firms' net losses/costs via bribing are higher than their net profits. As a result, it may affect negatively the enthusiasm of firms for avoiding tax or obtaining tax-related benefits via bribe. In light of the above arguments about the variable impact of corruption on tax management, Hypothesis 5.1 is posited:

Hypothesis 5.1 (H5.1). The impact of corruption on corporate tax management is inverted U-shaped so that tax management rises when corruption increases from low to moderate level, but falls when corruption increases from moderate to high levels.

Scholars have also begun to consider the impact of the institutional environment on corruption (Ali & Isse, 2003). When the government plays an intrusive economic role that hurts competition, corruption tends to be more rampant (Ades & Di Tella, 1999; Giavazzi & Tabellini, 2005). Thus, literature shows that improving marketization leads to decreased corruption via the mechanisms of governmental deregulation, simplification of regulations, and reduction of bureaucratic discretionary power (Dong & Torgler, 2013; Svensson, 2005). Heckelman and Powell (2010) found that in an environment with limited economic freedom, corruption plays a beneficial role in promoting growth via avoiding inefficient policies and regulations. Therefore, there is expected to be a strong correlation between decreased corruption and market development (Goel & Nelson, 2005; Heckelman & Powell, 2010). Still, a contrarian conclusion has also been drawn.

Recent empirical studies provide evidence of paradoxical co-development of marketization and corruption in China. Gong and Zhou (2015) using data from a Chinese mid-size city found that the essence of market competition has been often circumvented, modified or simply replaced by conditions conductive to corruption. Hence, along with the promotion of market-oriented economic reform, local officials have been given more discretionary power to influence the setting and implementing of local regulations that may increase officials' rent-seeking activities. Ko and Weng (2012) report that driven by a rapidly growing private sector, bribery has become the leading form of corruption in China. Dong and Torgler (2013) further found that in the process of transition to a market-oriented economy, economic development will increase corruption. As a result, the transition from communism can lead to new forms and characteristics of corruption (Karklins, 2005).

Given the above opposite views of the impact of the institutional factor on corruption, this chapter examines the moderating role of marketization on the relationship between corruption and tax management. This leads to the Hypothesis 5.2:

Hypothesis 5.2 (H5.2). The relationship between corruption and tax management is moderated by marketization.

Few empirical studies examined the impact of corruption on economic outcomes at the firm-level, and whatever existed has failed to give an unambiguous answer as to how corruption impacts firm performance. On the one side, the broad consensus on corruption is its being a pervasive obstacle to economic activities, negatively impacting firm performance. For example, Gaviria (2002) examined the impacts of corruption on firm performance indicators of Latin American private firms, and the results showed that corruption has a negative correlation with firms' sales growth and reducing firms'

competitiveness. Using survey data on Indian enterprises, Sharma and Mitra (2015) find a negative impact of corruption on firms' profitability and reduce efficiency. Thus, firm performance is hindered by corruption

On the other hand, some recent research supports the argument that corruption has a positive effect on firm performance, supporting the view of effective corruption. Sahakyan and Stiegert (2012) using survey data from Armenian businesses, found that firm of large size and facing less competition are more likely to perceive corruption as favorable to firm performance. In the context of the Chinese market, Wang and You (2012) found that corruption can benefit firms' growth. Furthermore, the results of Jiang and Nie (2014) show a positive relationship between regional corruption and the profitability of Chinese private firms, arguing that such firms through bribing local bureaucrats can avoid legal restriction and achieve profit enhancement.

While the above studies provide support to two alternative views of firm-level consequences of corruption, they overlooked how corruption impacts firm performance through firms' specific determinants, such as corporate tax management. Thus, to deepen the study, an attempt is made to examine the direct impact of corruption on corporate tax management (H5.1), how does corruption interact corporate tax management which in turn impacts firm performance needs to be further explored. The results will provide a more vigorous understanding of how corruption impacts microeconomic activities in China or other emerging countries without a perfect market mechanism. Hypothesis 5.3 is then:

Hypothesis 5.3 (H5.3). The relationship between tax management and firm performance is moderated by corruption.

5.3. Research Methodology

This section presents the methodology of this chapter, which includes sample selection, empirical measures of main variables, moderator variables, and control variables, and shows the empirical models used to examine the three hypotheses.

5.3.1. Sample and Data

The research period of this chapter is from 2008 to 2013. This chapter contains two levels of data, i.e. firm-level and province-level. The focus is on Chinese A-share (domestic market) listed companies listed on the Shanghai or Shenzhen Stock Exchanges. The firm-level data, corporate tax management and other financial control variables (e.g. size, leverage, firm age), come from the China Stock Market and Accounting Research (CSMAR) database[15].

Following Dong and Torgler (2013), Jiang and Nie (2014), and Xu, Li, Liu, and Gan (2017), this chapter uses the number of registered cases of corruption per 10,000 officials in each province in a given year to measure corruption at the provincial level. Thus, the provincial-level panel data for corruption are from the Procuratorial Yearbooks of China (published by the Supreme People's Procuratorate of China and listed in the Provincial People's Procuratorate websites). Moreover, to measure marketization, this chapter uses the indexes of provincial marketization. The data of provincial marketization indexes are collected from Marketization Index of China's Provinces: NERI Report 2016 prepared by Wang, Fan, and Yu (2017).

[15] The CSMAR database is developed by Shenzhen GTA Information Technology Corporation Limited. Co., Ltd., and designed by the China Accounting and Finance Research Centre of the Hong Kong Polytechnic University.

Following Wu, Wu, Zhou, and Wu (2012), Xu and Yano (2016), and Zhang, M, Zhang, and Yi (2016), this chapter excludes firms in the financial industry because their financial reporting and corporate tax practices differ from firms in other industries. Also excluded are the firm-year observations that are labeled as Special Treatment (ST) shares, covering firms with financial problems and/or other abnormal challenges. In addition, the sample is also limited to firm-year observations with both measures of corporate effective tax rates (ETRs) between zero and one, discussed in next section. Finally, the chapter deletes firm-year observations with missing information. This leaves 9033 firm-year observations. To reduce the effect of extreme outliers, the chapter trims the continuous variables at the 1st and 99th percentiles.

5.3.2. Variables

5.3.2.1. Corporate Tax Management

To capture the overall level of corporate tax management, this chapter uses two categories of corporate effective tax rates. Corporate effective tax rates can reflect all kinds of tax management transactions, even aggressive tax avoidance through permanent book-tax differences (Chen, Chen, Cheng, & Shevlin, 2010). The first category, which is the current effective tax rate defined as *ETR*, is calculated as income tax expenses minus deferred tax expenses over pretax profit. It reflects the firms' overall tax burden. This variable has been used in Chapter 3. To adjust the effect of tax deductions in different industries, this chapter further uses a second category, which is the industry-adjusted effective tax rate defined as *ETR_adj*, estimated by *ETR* minus average industry *ETR*. In 2008, China enacted a new corporate income tax law, which set a unified corporate income tax rate of 25% for both domestic and foreign-funded companies. To support the development of special industry, tax preference and incentives are granted to income from

these industries, such as new high tech, agriculture, forestry, livestock farming and fishery companies.

5.3.2.2. Corruption

Following prior studies (Dong & Torgler, 2013; Jiang & Nie, 2014; Xu, Li, Liu, & Gan, 2017), this chapter uses as the measure of corruption the number of registered cases of corruption per 10,000 public officials in a given province in a given year. It is so far the most commonly used proxy to measure the extent of Chinese bureaucratic corruption at the provincial level (Jiang & Nie, 2014). More importantly, this conviction-rate-based[16] proxy provides a relatively less subjective measure to study Chinese provincial corruption, and avoids problems of sampling error and survey non-response (Glaeser & Saks, 2006).

5.3.2.3. Marketization

The provincial-level marketization index, obtained from Marketization Index of China's Provinces: NERI Report 2016 prepared by Wang, Fan, and Yu (2017), is used as a measure of marketization. The marketization index reflects the provincial market environment in the registered place of listed enterprises, and reflects the extent of provincial institutional transition from a government-based to a market-based economic environment. The index has five dimensions: the relationship between the government and the market; the development of the non-state sector; the development of the product markets; the development of the factor markets; and the development of market intermediaries and the legal environment, which together offer a comprehensive

[16] Theoretically, the conviction rate and the number of registered cases of corruption are different. But in China, they tend to be highly correlated, even not identical. Generally, in most cases in China, suspect officials are first investigated by the discipline inspection commission of the Chinese Communist Party and its local branches. Only after they have obtained enough evidence, the discipline inspection commission and its local branches will refer corrupt cases to the procuratorates, then the procuratorates will register the cases. Moreover, in China, the courts and the procuratorates are both controlled by the government. Thus, except in a few very limited circumstances, the courts will not reject public prosecutions against corrupt cases.

assessment of the level of regional marketization development. A higher index means the provincial environment is more market-oriented.

5.3.2.4. Other Control Variables

In addition to the above variables, several other firm-level variables are included as control variables: firm size (*Size*), ROA *(ROA)*, firm age (*Age*), market/book ratio (*MB*), firm leverage (*Leverage*), firm sales growth (*Growth*), largest and top 10 shareholders' shareholdings (*Largest* and *Top10*), and discretionary accruals (*Discacc*).

Prior studies show that firm size and growth may impact the corporate tax management because large firms possess superior resources and political power to lobby and get a lower tax rate than smaller firms (Dyreng, Hanlon, & Maydew, 2008; Minnick & Noga, 2010; Siegfried, 1973). Thus, *Size* calculated by the natural logarithm of firms' total assets and *Growth* measured by firms' sales growth. *Leverage* is the ratio of total liabilities to total assets, and reflects the overall level of firms' debts. Because of tax-deductible interest payments, higher leverage may cause a lower ETRs that may influence corporate tax management (Gupta & Newberry, 1997; Richardson, Taylor, & Lanis, 2013).

ROA is the return on total assets, which employs as a control variable to test H5.1 and H5.2. Prior research has shown inconsistent results in the relationship between *ROA* and ETRs. On the one hand, firms with more taxable income can mean that they are more profitable leading to a positive relationship between *ROA* and ETRs (Dyreng, Hanlon, & Maydew, 2008). On the other hand firms with higher *ROA* may mean that they are more efficient and have more ability to pay less taxes (Zhang, M, Zhang, & Yi, 2016). *MB* is the market value of equity over the book value of the equity to test H5.1 and H5.2. The firm that has a higher *MB* has more investment opportunities that may impact corporate

decisions (Zhang, M, Zhang, & Yi, 2016). Firm age (*Age*) is the natural logarithm of the number of years since the firm went public. The longer the firms have existed, the more complex and mature are their corporate management and governance likely to be (Chen, 2015). *Discacc* is the absolute value of discretionary accruals, computed using the modified Jones model. Prior research shows that there is a relationship between tax management and earnings management (Frank, Lynch, & Rego, 2009; Kubick & Masli, 2016). This chapter also includes the percentage of shareholding by largest and top 10 shareholders to represent ownership concentration of the listed firms, for which prior studies have shown inconclusive results relating to the impact of ownership concentration on corporate tax management (Badertscher, Katz, & Rego, 2013; Richardson, Wang, & Zhang, 2016).

To address the potential problem of endogeneity, this chapter has included provincial fixed effects in the regressions to avoid unobserved regional characteristics, which may affect provincial corruption and tax management estimates. Following prior studies (Richardson, Wang, & Zhang, 2016; Zhang, M, Zhang, & Yi, 2016), industry and year dummies are added to control for industry and year fixed effects. Table 5.1 shows the definition and details of all variables.

Table 5.1: Variable Names and Descriptions

Variable	Description
Panel A: Tax Management	
ETR	Corporate effective tax rate, corporate tax expenses minus deferred tax expenses to the pretax profit.
ETR_adj	Corporate industry-adjusted effective tax rate, calculated by corporate ETR minus average-industry ETR
Panel B: Corruption, Marketization and Firm Performance	
Corruption	Number of registered cases of corruption per 10,000 public officials in a province in each year, data stems from Procuratorial Yearbook of China and China Statistical Yearbook.
Marketization	The overall marketization index in China's 31 provinces. The higher index suggests higher marketization. The indexes are obtained from National Economic Research Institute (NERI) Index of Marketization of China's provinces in 2016 to measure the quality of market-supporting institutions at the provincial level. The NERI Index project was sponsored by the National Economic Research Institute and the China Reform Foundation and conducted by Wang, Fan, and Yu (2017). The NERI indices capture the progress of the institutional transition in China's 31 provinces. Appraisals of the regional institutions are made along several dimensions, namely, the relationship between the government and the market, the development of the non-state sector, the development of the factor markets, the development of the product markets, and the development of market intermediaries and the legal environment.
ROA	Return on total assets, net income/total assets.
ROE	Return on equity, net income/shareholder equity
Panel C: Other Control Variables	
Size	Firm size, natural logarithm of total assets
Age	Firm age, the natural logarithm of current year minus the year when the firm went public.
Leverage	Firm's overall debt levels, total debts / total assets in book value
Growth	Firm sales growths, the changes in sales scaled by lag sales.
MB	Market-to-book ratio, the market value of equity over book value of equity
Discacc	The absolute value of abnormal accruals, measured as the absolute value of discretionary accruals estimated by the modified Jones model. See Appendix A.
Largest	Percentage of shareholding by the largest shareholder.
Top10	Percentage of shareholding by the top 10 largest shareholders.
Source: Prepared by author	

5.3.3. Model Specification

To examine the relationship between corruption and corporate tax management (Hypothesis 5.1), the following regression models, Eq. (5.1) and Eq. (5.2), are employed

$$TAX_{i,t} = \alpha_0 + \beta_1 Corruption_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 ROA_{i,t} + \beta_4 Age_{i,t} + \beta_5 MB_{i,t} + \beta_6 Leverage_{i,t} + \beta_7 Top10_{i,t} + \beta_8 Largest_{i,t} + \beta_9 Growth_{i,t} + \beta_{10} Discacc_{i,t} + Industry\ Dummies + Province\ Dummies + Year\ Dummies + \varepsilon_{i,t} \quad (5.1)$$

$$TAX_{i,t} = \alpha_0 + \beta_1 Corruption_{i,t} + \beta_2 Corruption^2{}_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 ROA_{i,t} + \beta_5 Age_{i,t} + \beta_6 MB_{i,t} + \beta_7 Leverage_{i,t} + \beta_8 Top10_{i,t} + \beta_9 Largest_{i,t} + \beta_{10} Growth_{i,t} + \beta_{11} Discacc_{i,t} + Industry\ Dummies + Province\ Dummies + Year\ Dummies + \varepsilon_{i,t} \quad (5.2)$$

Eq. (5.1) is used to test the linear relationship between corruption and corporate tax management and Eq. (5.2) is used to examine the non-linear relationship between them. In the model, $TAX_{i,t}$ represents corporate tax management for firm *i* in year *t*, which is the dependent variable proxied by $ETR_{i,t}$ and $ETR\_adj_{i,t}$. The independent variable, $Corruption_{i,t}$, is provincial corruption. A set of control variables includes firm size ($SIZE_{i,t}$), return on assets ($ROA_{i,t}$), firm age ($Age_{i,t}$), market-to-book ratio ($MB_{i,t}$), firm leverage ($Leverage_{i,t}$), shareholding by the top 10 shareholders ($TOP10_{i,t}$), shareholding by the largest shareholders ($Largest_{i,t}$), firm growth rate ($Growth_{i,t}$), absolute value of

discretionary accruals ($Discacc_{i,t}$). The detailed definition of each variable is shown in Table 5.1. In addition, three dummy variables of *Province, Industry* and *Year* are also included to control for regional, industry and time fixed effects.

Next, to test the moderating role of marketization on the relationship between corruption and tax management (Hypothesis 5.2), the following regression model, Eq. (5.3a) and Eq. (5.3b), are used.

$$TAX_{i,t} = \alpha_0 + \beta_1 Corruption_{i,t} + \beta_2 Marketization * Corruption_{i,t} + \beta_3 Marketization_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 ROA_{i,t} + \beta_6 Age_{i,t} + \beta_7 MB_{i,t} + \beta_8 Leverage_{i,t} + \beta_9 Top10_{i,t} + \beta_{10} Largest_{i,t} + \beta_{11} Growth_{i,t} + \beta_{12} Discacc_{i,t} + Industry\ Dummies + Province\ Dummies + Year\ Dummies + \varepsilon_{i,t} \quad (5.3a)$$

$$TAX_{i,t} = \alpha_0 + \beta_1 Corruption_{i,t} + \beta_2 Corruption^2{}_{i,t} + \beta_3 Marketization * Corruption_{i,t} + \beta_4 Marketization * Corruption^2{}_{i,t} + \beta_5 Marketization_{i,t} + \beta_6 SIZE_{i,t} + \beta_7 ROA_{i,t} + \beta_8 Age_{i,t} + \beta_9 MB_{i,t} + \beta_{10} Leverage_{i,t} + \beta_{11} Top10_{i,t} + \beta_{12} Largest_{i,t} + \beta_{13} Growth_{i,t} + \beta_{14} Discacc_{i,t} + Industry\ Dummies + Province\ Dummies + Year\ Dummies + \varepsilon_{i,t} \quad (5.3b)$$

If the results of Eq. (5.1) are supported, then Eq. (5.3a) will be used to test the moderating role of marketization, but if the results of Eq. (5.2) are significant, then Eq.

(5.3b) will be used to examine the impact of marketization. In the models of Eq. (5.3a) and (5.3b), the dependent variable is corporate tax management, represented by $TAX_{i,t}$, proxied by $ETR_{i,t}$ and $ETR\_adj_{i,t}$. The independent variable $Corruption_{i,t}$, is as defined above. $Marketization_{i,t}$ the moderator variable, represents the Chinese provincial marketization level. $Marketization*Corruption_{i,t}$ is an interaction term of provincial marketization and provincial corruption status. A set of control variables, already defined, are firm size ($SIZE_{i,t}$), return on assets ($ROA_{i,t}$), firm age ($Age_{i,t}$), market-to-book ratio ($MB_{i,t}$), firm leverage ($Leverage_{i,t}$), shareholding by the top 10 shareholders ($TOP10_{i,t}$), shareholding by the largest shareholders ($Largest_{i,t}$), firm growth rate ($Growth_{i,t}$), absolute value of discretionary accruals ($Discacc_{i,t}$). In addition, three dummy variables of *Province, Industry* and *Year* are included to control for regional, industry and time fixed effects.

To test the moderating role of corruption on the relationship between tax management and firm performance (Hypothesis 5.3), Eq. (5.4) and Eq. (5.5) are specified.

$$
\begin{aligned}
Performance_{i,t} &= \alpha_0 + \beta_1 TAX_{i,t} + \beta_2 Corruption_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 Age_{i,t} \\
&+ \beta_5 Leverage_{i,t} + \beta_6 Top10_{i,t} + \beta_7 Largest_{i,t} + \beta_8 Growth_{i,t} \\
&+ \beta_9 Discacc_{i,t} + Industry\ Dummies + Province\ Dummies \\
&+ Year\ Dummies + \varepsilon_{i,t}
\end{aligned}
\tag{5.4}
$$

$$Performance_{i,t}$$

$$= \alpha_0 + \beta_1 TAX_{i,t} + \beta_2 TAX * Corruption_{i,t} + \beta_3 Corruption_{i,t}$$

$$+ \beta_4 SIZE_{i,t} + \beta_5 Age_{i,t} + \beta_6 Leverage_{i,t} + \beta_7 Top10_{i,t} + \beta_8 Largest_{i,t}$$

$$+ \beta_9 Growth_{i,t} + \beta_{10} Discacc_{i,t} + Industry\ Dummies$$

$$+ Province\ Dummies + Year\ Dummies + \varepsilon_{i,t}$$

(5.5)

Eq. (5.4) is used to test the relationship between corporate tax management and firm performance, and Eq. (5.5) is used to examine the moderating impact of corruption on the relationship between tax management and firm performance. In the model, the dependent variable is firm performance, represented by $Performance_{i,t}$, proxied by $ROA_{i,t}$ and $ROE_{i,t}$. The dependent variable is corporate tax management, represented by $TAX_{i,t}$, proxied by $ETR_{i,t}$ and $ETR\_adj_{i,t}$. $Corruption_{i,t}$ is the moderator variable, and $TAX*Corruption_{i,t}$ is the interaction term of tax management and provincial corruption. A set of control variables includes firm size ($SIZE_{i,t}$), firm age ($Age_{i,t}$), firm leverage ($Leverage_{i,t}$), shareholding by the top 10 shareholders ($TOP10_{i,t}$), shareholding by the largest shareholders ($Largest_{i,t}$), firm growth rate ($Growth_{i,t}$), absolute value of discretionary accruals ($Discacc_{i,t}$). In addition, of *Province, Industry* and *Year* as three dummy variables are included to control for regional, industry and time fixed effects.

5.4.Empirical Results

5.4.1. Descriptive Statistics

Table 5.2 displays the distribution of ETRs by industry in the sample. The industrial classification is based on specifications of the China Securities Regulatory Commission (CSRC). The sample is highly skewed towards manufacturing, which comprises approximately 61% of the total sample (5524 out of 9033 firm-years), confirming that China is a manufacturing-based economy. In addition, Table 5.2 also shows that the different industries have different levels of effective tax rates because of the preferential tax policy to support specific industries such as agriculture, forestry, livestock farming and fishery industry and high-tech industry. Thus, the chapter controls for industry effects by including industry dummies.

Table 5.3 shows the summary statistics for all corporate financial variables. The mean and median *ETR* are 21.6% and 18.8%, respectively, and the 75^{th} percentile of ETR is 26.7%. Thus, more than half of the sample firms in this chapter have a lower corporate effective tax rate than the 25% statutory rate, and only about one-fourth of the sample firms have effective tax rate more than 25%. Therefore, corporate tax management appears to have become a common and significant strategy of corporate management in Chinese listed enterprises. In addition, the median of *ETR_adj* is -2.5%, which means more than half of the sample firms are below their industry average level, consonant with the reported *ETR*.

Table 5.2: Distribution of ETR by Industry

Industry	ETR	N
Agriculture, forestry, livestock farming and fishery	0.097	125
Mining	0.264	272
Manufacturing	0.201	5524
Electric power, heat, gas and water production	0.228	355
Construction	0.272	247
Wholesale and retail	0.277	694
Transportation, storage and post	0.209	368
Accommodation and catering services	0.248	46
Information technology and software	0.141	378
Real estate	0.303	619
Leasing and commercial service	0.244	90
Scientific research and technological service	0.190	31
Water conservancy, environment and public establishment	0.226	101
Education	0.488	4
Health and social work	0.293	12
Communication and culture	0.149	72
Miscellaneous	0.242	95
Total	0.216	9033
Source: Computed by the author		

Table 5.3: Summary Statistics of All Corporate Financial Variables

Variables	N	mean	Sd.	p25	p50	p75
ETR	9033	0.216	0.140	0.140	0.188	0.267
ETR_adj	9033	0.000	0.133	-0.069	-0.025	0.041
Size	9033	9.514	0.533	9.120	9.439	9.819
ROA	9033	0.051	0.040	0.021	0.041	0.070
Age	9033	1.853	0.931	1.099	2.197	2.639
MB	9033	0.277	0.271	0.004	0.219	0.517
Leverage	9033	0.447	0.207	0.287	0.456	0.612
Top10	9033	57.740	15.930	46.450	59.040	70.210
Largest	9033	37.060	15.440	24.430	35.580	48.560
Growth	9033	0.174	0.358	0.006	0.091	0.235
Discacc	9033	0.146	0.130	0.053	0.113	0.203
Source: Computed by the author						

Panel A and Panel B of Table 5.4 display the descriptive statistics of corruption and marketization across seven districts during 2008 to 2013, respectively. The results show that the corruption degree and marketization process are heterogenous across different locations. More specifically, Figure 5.1 shows the degree of provincial corruption in China's seven different districts. The northeast provinces in China are shown highest corruption degree with an upward trend during 2008 to 2013. Figure 5.2 shows the NERI index of overall marketization in China's 31 provinces and seven different districts during 2008 to 2013, published by Wang, Fan, and Yu (2017). The figure presents that the regional institutional quality is unequal. Moreover, in Figure 5.2, we can see that the overall marketization index shows an upward trend during 2008 to 2013, which means that institutional quality has been improved and perfected. In addition, marketization degree in southwest and northwest provinces is below the overall average degree, while eastern part of China is the most developed district. Therefore, China's local market development shows obvious imbalance.

Table 5.4: Descriptive Statistics of Corruption and Marketization

	2008	2009	2010	2011	2012	2013
Panel A: Corruption across Seven Districts						
Northern	23.359	24.047	25.892	25.834	27.792	27.679
Northeast	41.615	43.018	45.797	46.173	49.948	56.965
East	31.647	30.097	30.930	30.506	33.253	32.614
central	33.798	32.312	32.375	32.841	30.297	33.893
Southern	32.203	29.464	30.704	28.664	31.898	32.502
Southwest	32.366	27.998	28.483	25.447	28.100	25.142
Northwest	25.508	28.585	30.347	28.230	28.017	27.665
Total	30.606	29.942	31.185	30.133	32.076	32.284
Panel B: Marketization across Seven Districts						
Northern	5.700	5.732	5.774	5.960	6.598	6.836
Northeast	5.717	5.810	5.563	5.700	6.270	6.377
East	6.967	7.143	7.270	7.521	7.819	7.959
central	5.613	5.697	5.757	5.970	6.177	6.417
Southern	5.830	5.830	5.810	5.973	6.667	6.900
Southwest	4.436	4.388	4.188	4.202	4.368	4.444
Northwest	3.802	3.758	3.340	3.466	3.702	3.932
Total	5.482	5.529	5.445	5.604	5.981	6.156

Note: Seven District Classification

1. **Eastern**: Shandong province, Jiangsu province, Anhui province, Shanghai, Zhejiang province, Jiangxi province, Fujian province;
2. **Southern**: Guangdong province, Guangxi province, Hainan province;
3. **Central**: Hubei province, Hunan province, Henan province;
4. **Northern**: Beijing province, Tianjin province, Hebei province, Shanxi province, Inner Mongolia autonomous region;
5. **Northwest**: Ningxia Hui Autonomous Region, Xinjiang Autonomous Region, Qinghai province, Gansu province, Shaanxi Province;
6. **Southwest**: Sichuan province, Yunnan province, Guizhou province, Tibet Autonomous Region, Chongqing;
7. **Northeast**: Liaoning province, Jilin province, Heilongjiang province.

Source: Computed by the author

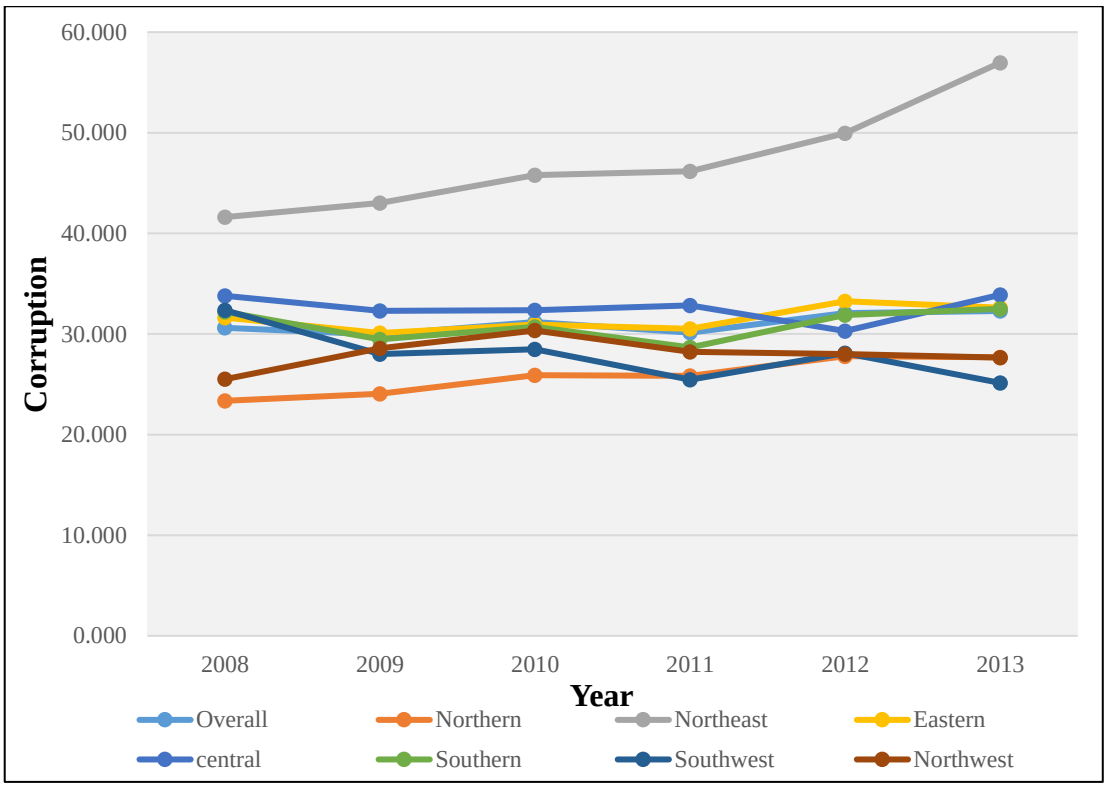

Figure 5.1: The Regional Corruption Degree Across Seven Districts in China During 2008 to 2013
(Source: Plotted by authors)
Note: the seven-district classification is shown in Table 5.4

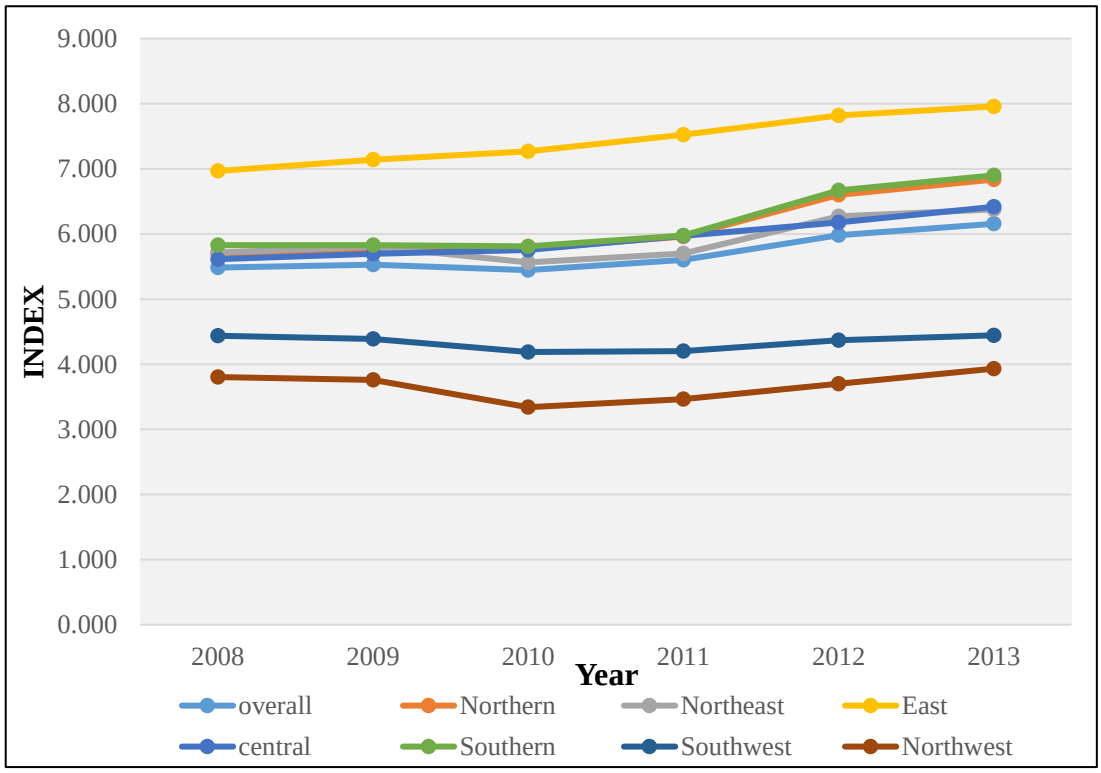

Figure 5.2: the NERI Index of Overall Marketization
(Source: Plotted by authors)
Note: the seven-district classification is shown in Table 5.4

Table 5.5 reports the correlation coefficients between all variables. The results show that most variables are correlated with the dependent variables, which proxied by *ETR* and *ETR_adj*. Since the correlations between all independent and control variables are less than 0.7, multicollinearity is not a problem in the following regression analysis in this chapter (Jr., Black, Babin, & Anderson, 2009). Furthermore, the calculated variance inflation factor (VIF) statistics show that VIF values of all variables are less than 5, which further supports the above results.

Table 5.5: Correlations Between All Variables

	ETR	ETR_adj	**Marketization**	**Corruption**	**Size**	**ROA**	**Age**
ETR_adj	0.951***						
Marketization	-0.003	-0.026**					
Corruption	0.021*	0.029***	-0.193***				
Size	0.111***	0.044***	-0.034***	-0.066***			
ROA	-0.285***	-0.258***	0.044***	-0.068***	-0.062***		
Age	0.156***	0.086***	-0.159***	0.051***	0.307***	-0.157***	
MB	-0.088***	-0.059***	0.056***	-0.033***	-0.159***	0.137***	-0.582***
Leverage	0.244***	0.158***	-0.127***	0.059***	0.515***	-0.407***	0.448***
Top10	-0.068***	-0.057***	0.123***	-0.073***	0.147***	0.220***	-0.454***
Largest	0.009	-0.011	0.029***	-0.076***	0.258***	0.066***	-0.075***
Growth	-0.029***	-0.031***	-0.029***	-0.0160	0.080***	0.208***	-0.083***
Discacc	0.021*	0.0140	-0.122***	0.040***	0.146***	-0.044***	0.0100
	MB	**Leverage**	**Top10**	**Largest**	**Growth**		
Leverage	-0.276***						
Top10	0.519***	-0.137***					
Largest	0.230***	0.075***	0.645***				
Growth	0.165***	0.106***	0.164***	0.078***			
Discacc	0.110***	0.181***	0.108***	0.090***	0.245***		

Note: *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.
The independent and control variables are shown in bold.
Source: Computed by the authors

5.4.2. The Effect of Corruption on Corporate Tax Management

Table 5.6 and Table 5.7 present empirical results of the relationship between corruption and tax management (H5.1) using ordinary least squares (OLS) and fixed-effect (FE) models with two dependent variables, *ETR* and *ETR_adj*, respectively. All variables have been defined in Table 5.1. All the regressions control for province, industry, and year effects. Standard errors in parentheses are heteroskedasticity-robust and clustered at the firm level. A Hausman test has been run to identify whether the fixed or random effects model is fitter the data in this section. In this case, it is, and so the fixed effects regressions employed and results are shown.

In column (1) to (4) of Table 5.6, the results show that there is no statistically significant linear relationship between corruption and corporate tax management. The results suggest that the effect of corruption on firm activities cannot be simply ascribed to a monotonic detrimental or beneficial effect. However, by including a linear term ($Corruption_{i,t}$) and a quadratic term ($Corruption\ squared_{i,t}$) of corruption with two measures of tax management (*ETR* and *ETR_adj*) in both OLS and fixed-effect (FE) regressions, the coefficients of the linear terms are significantly negative indicating that corruption leads to a decreasing corporate tax effective rate (Table 5.7, columns (2) to (4)). Because of the low corporate ETRs representing a low corporate tax burden, it reflects firms with a higher level of tax management. Thus, corruption is positively correlated with corporate tax management at low to moderate level of corruption. In addition, the quadratic coefficients shown in columns (2) to (4) of Table 5.7 are significantly positive indicating that high levels of corruption lead to an increasing effective tax rate. Thus, when corruption is over the moderate level, there is a negative correlation between corruption and corporate tax management.

These results provide evidence of a U-shape relationship between corruption and corporate effective tax rates, which indicates that the relationship between corruption and corporate tax management is inverted U-shaped. Hence, Hypothesis 5.1 is supported. Figure 5.3 and Figure 5.4 show a quadratic U-shape curve between corruption and corporate effective tax rates. The probability values of Figure 5.3 and Figure 5.4 are computed from the estimated models reported in column (2) and (4) of Table 5.7, respectively.

These results also show that when regional corruption is below a certain level, corruption plays a positive role to facilitate enterprises engaging in tax management activities to reduce firms' tax burden, indicating that the benefits of firms' doing such activities outweigh the costs and thus supports the "helping hand" view. But when corruption exceeds the moderate level, corruption shows a negative effect on tax management, indicating that when firms operate in a highly corrupt environment, the costs and/or risk of doing tax management would be greater than the benefits, which supports the "grabbing hand" view of government.

Table 5.6: The Linear Relationship Between Corruption and Corporate Tax Management (H5.1)

Dependent variable:	(1) OLS ETR	(2) FE ETR	(3) OLS ETR_adj	(4) FE ETR_adj
$Corruption_{i,t}$	0.000	0.000	0.000	0.000
	(0.43)	(0.81)	(0.34)	(0.73)
$Size_{i,t}$	-0.003	0.013	-0.003	0.013
	(-0.66)	(0.65)	(-0.60)	(0.63)
$Age_{i,t}$	0.009***	-0.005	0.009***	-0.005
	(3.14)	(-0.74)	(3.06)	(-0.80)
$ROA_{i,t}$	-0.836***	-1.334***	-0.825***	-1.307***
	(-14.41)	(-16.24)	(-14.28)	(-15.98)
$Leverage_{i,t}$	0.050***	0.036	0.048***	0.029
	(3.39)	(1.33)	(3.29)	(1.09)
$MB_{i,t}$	-0.000	0.004	0.000	0.005
	(-0.03)	(0.38)	(0.06)	(0.57)
$Growth_{i,t}$	0.005	0.008*	0.005	0.008*
	(1.06)	(1.65)	(1.17)	(1.69)
$Top10_{i,t}$	0.000	-0.000	0.000	-0.000
	(1.30)	(-0.48)	(1.16)	(-0.49)
$Largest_{i,t}$	-0.000	-0.000	-0.000	-0.000
	(-0.47)	(-0.13)	(-0.36)	(-0.15)
$Discacc_{i,t}$	-0.013	-0.002	-0.008	0.006
	(-1.00)	(-0.13)	(-0.65)	(0.41)
Province effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Constant	0.118**	0.174	0.013	-0.058
	(2.53)	(0.95)	(0.28)	(-0.32)
N	9033	9033	9033	9033
Adjusted R^2	0.164	0.094	0.082	0.079

Note: ***, ** and * are significance at 1%, 5% and 10% levels respectively.
t-values are in parentheses
Source: Computed by the author

Table 5.7: The U-shaped Relationship Between Corruption and Corporate Tax Management (H5.1)

Dependent variable:	(1) OLS ETR	(2) FE ETR	(3) OLS ETR_adj	(4) FE ETR_adj
$Corruption_{i,t}$	-0.003	-0.004*	-0.004*	-0.004*
	(-1.47)	(-1.76)	(-1.73)	(-1.96)
Corruption $squared_{i,t}$	0.000	0.000**	0.000*	0.000**
	(1.60)	(1.98)	(1.84)	(2.16)
$Size_{i,t}$	-0.003	0.013	-0.003	0.012
	(-0.66)	(0.63)	(-0.61)	(0.60)
$Age_{i,t}$	0.009***	-0.004	0.009***	-0.004
	(3.14)	(-0.63)	(3.05)	(-0.67)
$ROA_{i,t}$	-0.836***	-1.331***	-0.826***	-1.304***
	(-14.41)	(-16.25)	(-14.29)	(-15.99)
$Leverage_{i,t}$	0.049***	0.035	0.048***	0.029
	(3.38)	(1.33)	(3.28)	(1.08)
$MB_{i,t}$	-0.000	0.003	0.000	0.005
	(-0.04)	(0.36)	(0.05)	(0.55)
$Growth_{i,t}$	0.005	0.008*	0.005	0.009*
	(1.08)	(1.69)	(1.19)	(1.73)
$Top10_{i,t}$	0.000	-0.000	0.000	-0.000
	(1.30)	(-0.47)	(1.16)	(-0.47)
$Largest_{i,t}$	-0.000	-0.000	-0.000	-0.000
	(-0.47)	(-0.11)	(-0.35)	(-0.14)
$Discacc_{i,t}$	-0.013	-0.002	-0.009	0.005
	(-1.01)	(-0.14)	(-0.67)	(0.39)
Province effects	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes
Constant	0.147***	0.217	0.046	-0.011
	(2.98)	(1.19)	(0.95)	(-0.06)
N	9033	9033	9033	9033
Adjusted R^2	0.164	0.095	0.082	0.080

Note: ***, ** and * are significance at 1%, 5% and 10% levels respectively.
t-values are in parentheses
Source: Computed by the author

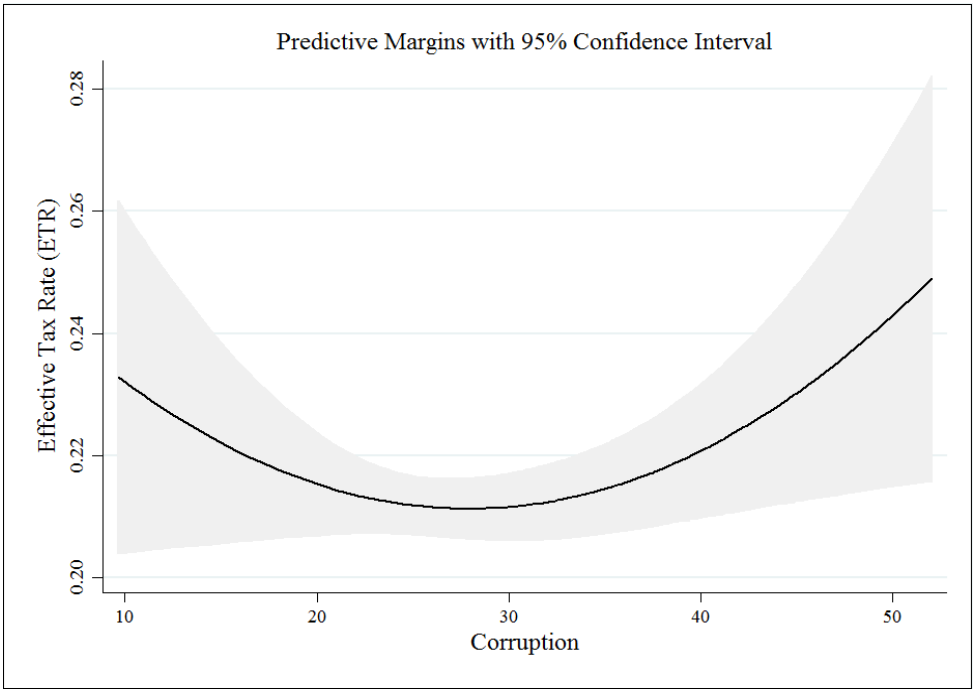

Figure 5.3: The U-shaped Effect of Corruption on Corporate Effective Tax Rate
(Source: Plotted by author)

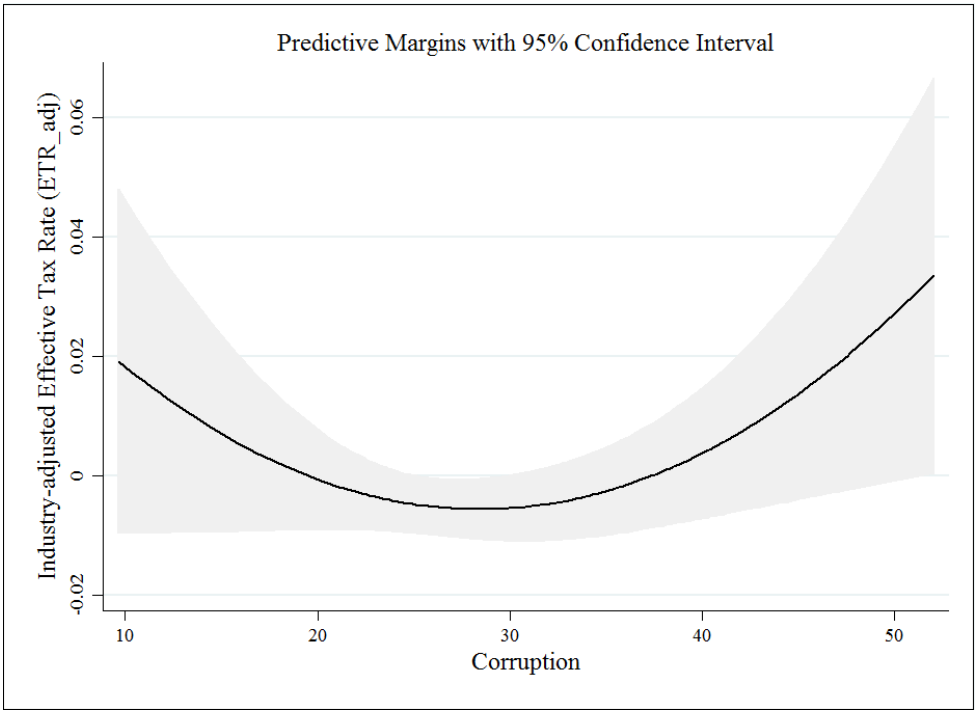

Figure 5.4: The U-shaped Effect of Corruption on Industry-adjusted Corporate Effective Tax Rate
(Source: Plotted by author)

5.4.3. The Moderating Effect of Marketization

Table 5.8 presents results of the moderating effect of marketization on the inverted U-shaped relationship between corruption and tax management using OLS and fixed-effect models (FE) with two dependent variables, *ETR* and *ETR_adj* in column (1) to (4), respectively. All the regressions control for province, industry, and year effects. Standard errors in parentheses are heteroskedasticity-robust and clustered at the firm level. The interaction terms between marketization and linear term of corruption (*Corruption*Marketization*$_{i,t}$) and quadratic term of corruption (*Corruption squared*Marketization*$_{i,t}$) are the key variables of interest in this section. A Hausman test has been run to identify whether the fixed or random effects model is fitter the data in this section. In this case, the fixed effects regression is employed and results are shown in Table 5.8.

In column (1) to (4) of Table 5.8, the coefficients of the interaction terms between corruption and linear term of corruption (*Corruption*Marketization*$_{i,t}$) are highly significant and positive, while the interaction terms of marketization and quadratic term of corruption (*Corruption squared * Marketization*$_{i,t}$) are highly significant and negative. Thus, these results support H5.2, which indicates that marketization moderates the curvilinear relationship between corruption and tax management. More specifically, marketization diminishes the impact of corruption on corporate tax management at both low to moderate levels of corruption and moderate to high levels of corruption.

Because the overall NERI Marketization index used in Eq. (5.3) includes five dimensions of provincial institutional environments' development, which are (1) the relationship between government and market, (2) development of non-state sectors, (3) development of product markets, (4) development of production factor markets, and (5)

development of market intermediaries and legal environment. To obtain a more specific and robust results of the moderating effects of marketization, this section also examined three dimensions related to this topic, which are the government-market relationship, non-state sectors development, and market intermediaries and legal environment development. The results show that strengthening the role of the non-state sectors in economy and improving the market intermediaries and legal environment can mitigate the effect of corruption on corporate tax management at both low to moderate levels of corruption and moderate to high levels of corruption. In short, the results suggest that to curb the effect of corruption, the government should synchronously perfect its market and legal systems. Appendix B shows the detailed results of the effects of the three specific dimensions of marketization on the relationship between corruption and tax management.

Table 5.8: The Impact of Marketization on The Relationship Between Tax Management and Corruption (H5.2)

Dependent variable:	OLS (1) ETR	OLS (2)ETR_adj	FE (3) ETR	FE (4)ETR_adj
$Corruption_{i,t}$	-0.018***	-0.019***	-0.019***	-0.019***
	(-2.87)	(-2.93)	(-2.91)	(-2.89)
Corruption $squared_{i,t}$	0.000***	0.000***	0.000***	0.000***
	(2.78)	(2.79)	(2.81)	(2.75)
Corruption*$Marketization_{i,t}$	0.002***	0.002***	0.002***	0.002**
	(2.64)	(2.63)	(2.63)	(2.55)
Corruption squared * $Marketization_{i,t}$	-0.000**	-0.000**	-0.000**	-0.000**
	(-2.48)	(-2.44)	(-2.44)	(-2.34)
$Marketization_{i,t}$	-0.034***	-0.036***	-0.035***	-0.036***
	(-2.65)	(-2.81)	(-2.76)	(-2.87)
$Size_{i,t}$	-0.003	-0.003	0.011	0.010
	(-0.67)	(-0.62)	(0.53)	(0.49)
$Age_{i,t}$	0.009***	0.008***	-0.004	-0.004
	(3.09)	(3.00)	(-0.56)	(-0.58)
$ROA_{i,t}$	-0.835***	-0.824***	-1.329***	-1.302***
	(-14.38)	(-14.26)	(-16.16)	(-15.90)
$Leverage_{i,t}$	0.050***	0.048***	0.036	0.030
	(3.40)	(3.30)	(1.36)	(1.12)
$MB_{i,t}$	-0.001	0.000	0.003	0.004
	(-0.08)	(0.01)	(0.27)	(0.46)
$Growth_{i,t}$	0.005	0.005	0.008	0.008*
	(1.05)	(1.16)	(1.65)	(1.70)
$Top10_{i,t}$	0.000	0.000	-0.000	-0.000
	(1.30)	(1.16)	(-0.45)	(-0.44)
$Largest_{i,t}$	-0.000	-0.000	-0.000	-0.000
	(-0.46)	(-0.35)	(-0.05)	(-0.07)
$Discacc_{i,t}$	-0.013	-0.009	-0.003	0.005
	(-1.03)	(-0.68)	(-0.18)	(0.35)
Province	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Constant	0.378***	0.292***	0.472**	0.256
	(3.71)	(2.87)	(2.27)	(1.24)
N	9033	9033	9033	9033
Adjusted R^2	0.164	0.083	0.096	0.081

Note: ***, ** and * are significance at 1%, 5% and 10% levels respectively.
t-values are in parentheses
Source: Computed by the author

5.4.4. Corporate Tax Management, Corruption, and Firm Performance

No less an important question is how corruption affects the relationship between tax management and firm performance. To ascertain this requires a two-step process, the first being to examine the relationship between tax management and firm performance, and the second being to analyze the moderating effect of corruption on the relationship between tax management and firm performance.

Firstly, the relationship between tax management and firm performance has been estimated using fixed-effect models, where standard errors in parentheses are heteroskedasticity-robust and clustered at the firm level. Based on the Hausman test, the fixed-effects model is used in this section. The dependent variable of firm performance uses two different measures, *ROA* and *ROE*. The independent variable of tax management uses two measures, *ETR* and *ETR_adj*. The results are shown in column (1) to (4) of Table 5.9, which shows that the coefficients of two effective tax rates (*ETR* and *ETR_adj*) are highly significant with a negative sign (-0.050, -0.049, -0.109, and -0.109, respectively). Since the lower effective tax rates represent a lower tax burden and more tax management, the results show that corporate tax management is positively correlated with contemporaneous firm performance.

Next, the moderating effect of corruption on the relationship between tax management and firm performance is tested using fixed-effect models (columns (1) to (4) of Table 5.10). The dependent variable of firm performance and independent variable of tax management are as indicated in Table 5.9. In addition, the interaction terms between tax management and corruption are $ETR*corruption_{i,t}$ and $ETR\_adj*corruption_{i,t}$. The coefficients of the equations explaining $ETR_{i,t}$ and $ETR\_adj_{i,t}$ in column (1) to (4) are highly significantly negative at 1% level, which consistent with the results in Table 5.9.

Further, the coefficients of interaction terms between tax management and corruption, *ETR*corruption*$_{i,t}$ and *ETR_adj*corruption*$_{i,t}$, are significant and negative, except for the coefficient of the interaction term of *ETR_adj*corruption*$_{i,t}$ in column (2) which is insignificant. In short, the results suggest that the positive correlation between tax management and firm performance can be strengthened by corruption, corroborating the argument that corruption could be beneficial to firm performance through tax management.

Table 5.9: The Impact of Corporate Tax Management on Firm Performance

Dependent variable:	(1) ROA	(2) ROA	(3) ROE	(4) ROE
$ETR_{i,t}$	-0.050***		-0.109***	
	(-18.44)		(-18.40)	
$ETR\_adj_{i,t}$		-0.049***		-0.109***
		(-18.22)		(-18.30)
$Corruption_{i,t}$	0.000	0.000	0.000	0.000
	(0.73)	(0.71)	(1.42)	(1.40)
$Size_{i,t}$	-0.005	-0.005	-0.005	-0.005
	(-1.47)	(-1.47)	(-0.68)	(-0.69)
$Age_{i,t}$	0.000	0.000	0.007***	0.007***
	(0.15)	(0.13)	(2.79)	(2.76)
$Leverage_{i,t}$	-0.074***	-0.075***	0.027**	0.026**
	(-12.22)	(-12.31)	(2.31)	(2.21)
$Growth_{i,t}$	0.018***	0.018***	0.038***	0.038***
	(14.87)	(14.88)	(15.19)	(15.19)
$Top10_{i,t}$	0.000***	0.000***	0.001***	0.001***
	(4.94)	(4.96)	(5.30)	(5.32)
$Largest_{i,t}$	0.000*	0.000*	0.001***	0.001***
	(1.90)	(1.90)	(3.42)	(3.42)
$Discacc_{i,t}$	-0.014***	-0.013***	-0.020***	-0.020***
	(-3.91)	(-3.81)	(-3.12)	(-3.00)
Province	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Constant	0.081**	0.070**	0.018	-0.007
	(2.37)	(2.03)	(0.27)	(-0.11)
N	9033	9033	9030	9030
Adjusted R^2	0.239	0.237	0.212	0.211

Note: ***, ** and * are significance at 1%, 5% and 10% levels respectively.
t-values are in parentheses
Source: Computed by the author

Table 5.10: The Moderating Effect of Corruption on The Relationship Between Tax Management and Firm Performance (H5.3)

Dependent variable:	(1) ROA	(2) ROA	(3) ROE	(4) ROE
$ETR_{i,t}$	-0.035***		-0.072***	
	(-3.92)		(-3.86)	
$ETR*corruption_{i,t}$	-0.001*		-0.001**	
	(-1.75)		(-2.09)	
$ETR\_adj_{i,t}$		-0.036***		-0.065***
		(-4.04)		(-3.42)
$ETR\_adj*corruption_{i,t}$		-0.000		-0.002**
		(-1.46)		(-2.34)
$Corruption_{i,t}$	0.000	0.000	0.001**	0.000
	(1.51)	(0.72)	(2.30)	(1.41)
$Size_{i,t}$	-0.005	-0.006	-0.005	-0.005
	(-1.45)	(-1.47)	(-0.66)	(-0.69)
$Age_{i,t}$	0.000	0.000	0.007***	0.007***
	(0.11)	(0.11)	(2.73)	(2.72)
$Leverage_{i,t}$	-0.074***	-0.074***	0.027**	0.026**
	(-12.23)	(-12.33)	(2.34)	(2.26)
$Growth_{i,t}$	0.018***	0.019***	0.038***	0.038***
	(14.90)	(14.90)	(15.23)	(15.24)
$Top10_{i,t}$	0.000***	0.000***	0.001***	0.001***
	(4.97)	(4.98)	(5.35)	(5.36)
$Largest_{i,t}$	0.000*	0.000*	0.001***	0.001***
	(1.89)	(1.90)	(3.40)	(3.41)
$Discacc_{i,t}$	-0.014***	-0.013***	-0.021***	-0.020***
	(-3.94)	(-3.83)	(-3.16)	(-3.04)
Province	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes
Constant	0.076**	0.069**	0.005	-0.010
	(2.21)	(2.00)	(0.07)	(-0.16)
N	9033	9033	9030	9030
Adjusted R^2	0.239	0.238	0.213	0.212

Note: ***, ** and * are significance at 1%, 5% and 10% levels respectively.
t-values are in parentheses
Source: Computed by the author

5.5. Chapter Summary

Corruption is a subject that has become much debated in China, with the conventional wisdom being that it is uniformly bad for firm performance. In investigating corruption's role relationship with tax management, this chapter finds this view to be an oversimplification. There exists an inverted U-shaped relationship between corruption and corporate tax management. The relationship is positive at low to moderate levels of corruption but negative as corruption escalates. However, this relationship is mitigated by marketization, so that as the economy becomes more market oriented, corruption's impact is reduced.

Further, in finding a positive relationship between tax management and performance, and that corruption strengthens this relationship, the implication is that the level of corruption that exists in China is still on the downward-sloping part of the corruption-ETR curve and has been helpful to firm performance. That, despite the mitigating impact of marketization, corruption's moderating role remains positive may at least partially explain why corruption continues to thrive even as China liberalizes. The positive role of corruption also suggests the presence of governance and regulatory challenges that resort to corruption can surmount.

Finally, the results of this chapter provide several important implications. From a policy perspective, the results suggest that further liberalization will have salutary effects in terms of reducing the incentive to resort to corruption. At the same time, efforts to curb corruption without the corresponding strengthening of institutions and clarification of rules and regulations can have adverse short-term consequences for firm performance.

CHAPTER 6: CONCLUSION

6.1. Introduction

This thesis attempted to provide a systematic analysis of firm-level and market-level outcomes of corporate tax management in China's listed enterprises using quantitative analysis to answer three specific questions. These questions are addressed again below. The findings of this analysis are synthesized in the next section. Section 6.3, 6.4, and 6.5 discuss implications for theory, policy, and practice, respectively. Lastly, Section 6.6 proposes the recommendations for future research.

6.2. Synthesis of Findings

As an important field, corporate tax management has been researched a great deal in western countries. This thesis, however, focuses on China as a special issue. The results not only show the consequences of tax management in the Chinese context but also addresses the question of whether the economic transition and reforms have moved China's enterprise environment closer to the norm of the developed countries so that the outcomes of tax management in China converges with what is found in the latter countries. And more important, this thesis should also serve as reference for other emerging countries, especially those in the process of transition.

Two consequences of corporate tax management, - in-firm and market-level outcomes - were investigated. This was undertaken through three major research questions.

Research Question 1: What is the relationship between corporate tax management and firm performance in Chinese listed enterprises, and how does the after-tax cash arising

from tax management benefit firms' market value?

Chapter 3 examined the first research question in this thesis, which is the impact of corporate tax management on firm performance via firms' profitability, growth, and market value in China's listed enterprises. Based on a large sample of Chinese A-share listed enterprises from 2004 to 2012, the results reveal that there is a significant positive relationship between tax management and firm value, which is made up of significant negative direct and positive indirect impacts. More specifically, the significant negative direct relationship between tax management and firm value supports the agency theory, in which tax management is a hidden managerial rent. The significant positive indirect relationship between tax management and market value is achieved through the mediating role of increasing firm profitability and growth performance. Therefore, the results suggest that tax management as an important firm financial strategy could be continued but they need to be bolstered by legal regulations to reduce the possible negative consequences from managerial rent seeking. Thus, Chapter 3 provides direct evidence on how tax avoidance can help maximize firm value.

Research Question 2: What are the extreme market outcomes of corporate tax management in Chinese listed enterprises, and how does government ownership influence these extreme outcomes?

The results from Chapter 4 answer the second research question. Compared to prior studies by Kim, Li, and Zhang (2011) and Li, Luo, Wang, and Foo (2016), which focused on future extreme outcomes, Chapter 4 investigated the extreme market outcomes of tax management during different time periods. Based on the sample of Chinese A-share listed enterprises for the period 2008 to 2013, the study finds that there is a negative relationship between tax management and contemporaneous stock price crash risk, which means that

tax management activities will reduce the immediate possibility of stock price crash. However, the study also finds that tax management will increase firms' future stock price crash. Therefore, the results support the bad news hoarding theories. Corporate tax management activities can be used undesirably as a tool to conceal negative firms' news, such as adverse operating outcomes, manipulate management performance resulting in a stock price crash. These opportunist short-term behaviors would ultimately increase future enterprise risk, with the negative relationship reversing with the passage of time.

Given the specific characteristics of Chinese government controlled shareholding, Chapter 4 examined whether listed state-owned/controlled enterprises (LSOEs) carry less risks. The empirical results show that central- and provincial-LSOEs cannot statistically mitigate the probability of future stock price crashes, while municipal-LSOEs may have a higher probability of future stock price crashes.

Research Question 3: How does corruption and marketization impact corporate tax management in Chinese listed enterprises, and how does corruption impact the consequence of corporate tax management?

Chapter 5 first investigated the effect of corruption on corporate tax management, and found that there is a U-shaped relationship between corruption and corporate effective tax rates during the period of 2008 to 2013, meaning an inverted U-shaped relationship exists between corruption and corporate tax management. There is a positive relationship between corruption and tax management at low to moderate levels of corruption, and a negative relationship between corruption and tax management beyond these levels of corruption. Hence, when regional corruption is below a certain level, corruption will promote firms to engage in tax management. However, when the firms operate in a high level of corruption area over the critical point, it will inhibit tax management.

Moreover, Chapter 5 finds that regional marketization can mitigate the impact of corruption on corporate tax management regardless of the level of corruption. Furthermore, the results also show that corruption strengthens the positive correlation between tax management and firm performance, which could be viewed as evidence corroborating the argument that corruption can be undesirably beneficial to firm performance through manipulative tax management.

Taken together, the findings suggest that tax management will likely increase given the net positive impact on firm performance. This will confer benefits both to listed firms and their managements, but revenue losses to the state. However, balanced against these benefits is the vulnerability to future crashes as bad news emerge from conduct masked through manipulative tax management. If the firm is large, this impact can extend beyond the firm to destroy the entire financial market. State ownership or control cannot mitigate this vulnerability. Indeed, municipal listed SOEs, being far removed from central government control, are actually likely to raise the possibility of future crash risk.

Corruption, which is an increasingly discussed topic in China nowadays, impacts the ease with which tax management can be undertaken, but this impact varies with the severity of corruption. At low levels of corruption, tax management can be facilitated productively, but this relationship reverses when the level of corruption exceeds a certain threshold. This can be explained by the argument that at high levels of corruption, it is possible to bypass tax management altogether by blatant bribery, thereby rendering tax management ineffective.

Regardless of the relationship between corruption and tax management, the former is found to affect the positive relationship between tax management and firm performance advantageously. The overall assessment of tax management then is that it confers gains to firms, which can be enhanced by the existence of corruption.

6.3. Implications for Theory

Existing studies on tax management in emerging markets in general and China are still in an embryonic stage. Under China's distinctive context, this thesis contributes to extant research by providing a robust and systematic analysis of the consequences of corporate tax management. Therefore, the findings of this thesis provide several implications for theory.

Firstly, the result of a negative direct relationship between tax management and market value (examined in Chapter 3) supports the agency perspective on corporate tax management. The separation of ownership and control inherent in modern corporations can raise managerial opportunism resulting in negative consequences from tax management (Chen, Chen, Cheng, & Shevlin, 2010; Mihir A. Desai & Dhammika Dharmapala, 2009; Kim, Li, & Zhang, 2011). But examining the indirect impact of tax management, this thesis shows that it improves firm value through increasing profitability and growth, which sheds light into how governance can increase shareholder wealth.

Secondly, the results from the second research question (examined in Chapter 4) supports the bad news hoarding theory developed by Jin and Myers (2006) and Bleck and Liu (2007). Most prior studies examining the bad news hoarding theory of stock price crash risk of economic activities are based on the time dimension of future (Kim, Li, & Zhang, 2011; Li, Luo, Wang, & Foo, 2016; Xu, Jiang, Chan, & Yi, 2013), overlooking

how the current outcomes impact future extreme outcomes. The empirical results of lower contemporaneous stock price crash risk of tax management provide the empirical evidence to support the contention that corporate tax management can be deployed to conceal adverse operating outcomes, manipulate management performance thereby producing reduced immediate crash risk. Also, when concealed opportunist short-term behavior is eventually uncovered, it will result ultimately in future stock price risk. Thus, the relationship between tax management and stock price crash risk will change with the passage of time. Overall, the results of Chapter 4 are consistent with the notion that tax management can offer opportunities to managers to conduct managerial opportunism, while bad news hoarding will increase future crash risk.

Thirdly, the results for municipal listed SOEs show a higher probability of future stock price crash (examined in Chapter 4), contrary to conventional wisdom of SOEs as stabilizing factors. Thus, the results are not only consistent with the simple conflict of interests between shareholders and managers, they also reveal more complicated and deeper problems that exist between governments and listed SOEs' managers. China being a transition economy, its state-owned/controlled enterprises account for a considerable portion of China's economy and play an important role in national development. While listed state-owned/controlled enterprises have experienced several reforms, unlike the wholly state-owned enterprises, they have a more complicated and special principal-agent relationship. Thus, the results from this study extend the agency theory by considering modern listed SOEs as a feature specific to China.

Finally, the results of the inverted U-shaped relationship between corruption and tax management (examined in Chapter 5) provides empirical evidence to support the assumption that corruption in government can play a dual role of both a helping hand and a grabbing hand impacting corporate performance. Corruption cannot be simply ascribed

to having a monotonic detrimental or beneficial effect. Furthermore, the results confirm that for China as a large transition economy, the development of regional institutional environment is heterogenous across different locations, unlike in developed countries where studies safely assume that the institutional environment is homogenous within a country (Aguilera, 2005). Thus, responding to the unbalance market development in different regions in China (Zhang & Rasiah, 2015), the extent of government intervention and marketization may vary considerably across regions, which causes the different impacts of corruption in firms' decision-making.

6.4. Implications for Policy

Tax revenue, as the main source of national revenue, is an important tool in macroeconomic regulation, the performance of markets, and decision-making of enterprises and investors' activities. Therefore, the findings of this thesis provide several implications for policy.

Firstly, from the findings, we can conclude that during the last three-decades of enterprise reforms, the Chinese corporate environment has moved closer to that of market economies. However, it also comes with corporate governance problems, such as the conflicting interests of shareholders and managers. Indeed, encouraging state enterprises to list on stock exchanges brings with it greater market discipline but also abets tax management to the detriment of government finances, an additional area that requires careful monitoring. Thus, the government should improve market transparency, reduce government intervention, and provide a healthy market mechanism to prevent negative consequences of manipulative managerial rent seeking. Taxation has an important role in helping to deepen economic and social development.

Secondly, China's privatization approach, although has advantages, also brings problems. Instead of full privatization of state enterprises, China introduced partial privatization to reform SOEs. Thus, profit-oriented listed state-owned/controlled enterprises (LSOEs) has become a phased phenomenon in China's stock market. Compared to the wholly state-owned enterprises that have to bear more social responsibilities, LSOEs have profit-seeking as a major objective (Kang & Kim, 2012). Because of partial privatization, LSOEs are still ultimately controlled by the different levels of governments, which may lead them to be saddled with institutional and agency problems. More importantly, local governments are viewed as privatization-friendly. When their controlled enterprises are in trouble, they may easily privatize them (Liu, 2014). At this juncture, local officials and managers of state enterprises may collude with each other to utilize the transition process to seek their individual interests and even annex national assets. Thus, the findings suggest that policymakers should pay heed to the process of state enterprise privatization and prudently assess privatization in local state enterprises. Central government also needs to further strengthen state assets' supervision and administration.

Thirdly, fiscal decentralization has given local governments more autonomy, an example being the tax-sharing system giving local governments more financial power and discretionary funds, which allows local administrators to engage in rent-seeking and maximizing self-interests. It may result in a high probability of potential risk. The findings of this thesis imply that while fiscal decentralization is recommended, the central government needs to strengthen its supervision system to guarantee that implementation is effective while at the same time restricting power abuses and rent-seeking behaviors.

Fourthly, since China is still in the process of economic and social transformation, problems such as weak legal restriction of administrative power, allowing officials to

abuse their power eventually leading in their corruption and downfall are inevitable. On the other hand, firms resort to corruption when they operate in a weak institutional environment, with corruption sought more as "speed money" to gain preferences to benefit corporate performance and/or circumvent cumbersome regulations. Thus, corruption appears to be a phenomenon that coexists with modernization. With continuous improvement of institutions, such as enhancement of marketization, the negative rents through corruption will be reduced. The positive role of corruption on tax management and firm performance provide another important policy implication for this thesis. To succeed in the fight against corruption, the Chinese government must have deep and precise insights into the problem of corruption, making proper structural reforms, perfecting institutional environment and setting up an effective anti-corruption supervision system.

In relation to the effect of macro-determinants on corporate decision-making, corruption and institutional development not only matters for the macroeconomy but also for internal corporate activities. It supports the common view that emerging economies experience more severe agency problems than developed economies due to the lack of forceful legal protection and related governance mechanisms (Li & Xia, 2008; Tu, Lin, & Liu, 2013). Hence, when governments make a decision on resource allocation, they should synchronously establish a sound monitoring mechanism combined with governance monitoring and administrative monitoring.

6.5. Implications for Practice

This thesis can be beneficial to senior managers and board members to better understand the consequences of engaging in complex tax management issues. Because tax management brings benefits to enterprises as well as can lead to potential risks, it may

create uncertainty that can influence future corporate outcomes, which may damage the firm. Thus, enterprises making decisions on tax management should ensure after-tax returns maximization rather than to simply reduce corporate tax burden.

Besides, this thesis is potentially useful for investment bankers, security analysts, and auditors who monitor enterprises because the results imply that tax management activities can be used as a mask to help managers manipulate earnings so as to conceal the true performance of a firm, which may eventually destroy the long-term value of the firm.

Moreover, this thesis is also potentially informative for regulators and regulation-setters because the findings suggest that corporate tax management may facilitate managers' opportunistic behaviors thereby leading to extreme market results.

Last but not least, China as a socialist market-oriented economy that despite its special political, cultural, and social environments has features and characteristics share by other developing and transition economies. The results of this thesis can provide useful guidelines and lessons for these countries to improve their tax system and promote the development of the institution-building.

6.6. Recommendations for Future Studies

This thesis examined the outcomes of corporate tax management via firm performance and risk of stock price crash, which can generate two types of consequences. These consequences are multi-dimensional with macroeconomic implications, such as fiscal revenue, reforms, and government effectiveness. Thus, the study suggests future researchers or scholars to pay more attention to the macro consequences of tax management.

In addition, this study uses data from Chinese A-share listed enterprises, including all industries except the financial industry, but the study does not compare the differences and similarities between these industries. Thus, future studies can be developed further to consider industry factors, such as industry protection and competition among industries.

Moreover, China's market has the features of weak information disclosure and imperfect accounting standards, which make corporate research difficult to ensure the the accuracy of results. Compared to non-listed companies, information disclosure of listed enterprises is more accurate and up-to-date. To ensure the accuracy of results, this thesis has chosen listed enterprises as the target sample. Thus, the results may not be generalizable to non-listed companies, especially for small and medium companies, which are less likely to suffer interest conflicts between managers and owners. Future studies can try to cover these enterprises.

Finally, this thesis focused on firms' overall tax management status, using corporate effective tax rates as the main measures of corporate tax management. Future studies can use more specialized tax management measures to examine the different outcomes.

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LIST OF PUBLICATIONS AND PAPERS PRESENTED

Paper Published:

1. Corporate Tax Avoidance and Performance: Evidence from China's Listed Companies. *Institutions and Economies* (Scopus), July 2016, Vol. 8, No.3
   Authors: Zhang Chen, Cheong Keecheok, Rajah Rasiah

2. Employment as A Journey or A Destination? Interpreting Graduates' and Employers' Perceptions – A Malaysia Case Study. *Studies in Higher Education* (ISI), July 2016
   Authors: Keecheok Cheong, Christopher Hill, Yin-Ching Leong, Zhang Chen

3. Effective Corporate Board Structure and Agency Problems: Evidence from China's Economic Transition. *International Journal of China Studies* (Scopus), August 2016
   Authors: Zhang Cheng, Cheong Keecheok, Rajah Rasiah, Zhang Chen

4. Corruption, Marketization and Corporate Tax Management in China: Evidence from Listed Firms. *Malaysian Journal of Economic Studies* (Scopus), December 2017
   Authors: Zhang Chen, Cheong Keecheok, Rajah Rasiah

5. Book Review: Fortune Makers: The Leaders Creating China's Great Global Companies. *International Journal of China Studies* (Scopus), August 2017
   Author: Zhang Chen

6. The Extreme Outcomes of Corporate Tax Management: Evidence from Chinese Listed Enterprises. *Institutions and Economies* (Scopus), July 2018, Vol.10, No.1

   Authors: Zhang Chen, Cheong Keecheok, Rajah Rasiah

Paper Presented:

1. 3rd International Conference on Accounting, Business and Economics (ICABEC 2014). Research presentation titled "Political Connection and Corporate Tax Avoidance in Chinese Listed Enterprises" (26-28 August 2014)

2. International Symposium on Sustainable Development and Management. Research presentation titled "The Extreme Returns of Corporate Tax Management: Evidence from China's Listed Enterprises" (8-9 October 2016)

APPENDICES

APPENDIX A: Measurement of Firm-Specific Earnings Management (*Discacc*)

Chapter 4 and Chapter 5 employed the modified Jones model (Patricia M Dechow, Richard G Sloan, & Amy P Sweeney, 1995) to estimate discretionary accruals, which is a common measure of earnings management.

$$\frac{TA_{i,t}}{Asset_{i,t-1}} = \alpha_0 \frac{1}{Asset_{i,t-1}} + \beta_1 \frac{\Delta Sales_{i,t}}{Asset_{i,t-1}} + \beta_2 \frac{PPE_{i,t}}{Asset_{i,t-1}} + \varepsilon_{i,t}$$

(A.1)

The estimated coefficients from Eq. (A.1) are then used to compute discretionary accruals ($Discacc_{it}$) using the equation.

$$\text{Discacc}_{i,t} = \frac{TA_{i,t}}{Asset_{i,t-1}} - (\alpha_0 \frac{1}{Asset_{i,t-1}} + \beta_1 \frac{\Delta Sales_{i,t} - \Delta Rec_{i,t}}{Asset_{i,t-1}} + \beta_2 \frac{PPE_{i,t}}{Asset_{i,t-1}})$$

(A.2)

where $TA_{i,t}$ is total accruals for firm *i* in year *t*, calculated as operating profits minus cash flow from operations; $Asset_{i,t-1}$ is the book value of total assets for firm *i* at the beginning of year *t*; $\Delta Sales_{i,t}$ is the change in total revenue of firm *i* in year t; $\Delta Rec_{i,t}$ is the change in accounts receivable for firm *i* in year t; and $PPE_{i,t}$ is the gross amount of fixed assets for firm *i* at the end of year *t*. The variable $Discacc_{i,t}$ is the absolute value of discretionary accruals for firm *i* at year *t*.

APPENDIX B: The Impacts of Three Specific Dimensions of Marketization on The Relationship Between Corruption and Tax Management

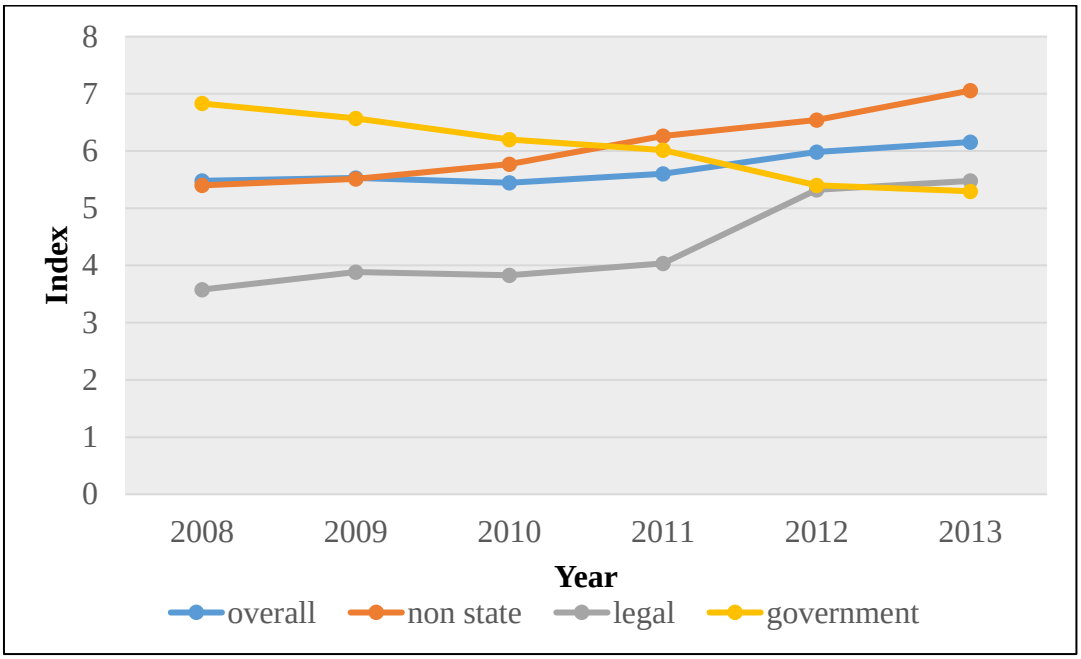

Figure B1: The three specific dimensions of marketization during 2008 to 2013 (Source from: Marketization Index of China's Provinces: NERI Report 2016; Plotted by authors)

Note: Blue line of *overall* means the overall marketization index in China's 31 provinces. The detail information see Table 5.1.

Red line of *non-state* means the index of the development of the non-state sector in China's 31 provinces. The index reflects the ownership structure of the economy and the transition from public ownership to private ownership.

Grey line of *legal* means the index of market intermediaries and the legal environment development. The index captures the establishment of intermediate institutions such as law offices, accounting and auditing firms, and the institutional environment ensuring enforcement of contracts and protecting property rights.

Yellow line of *government* means the index of Government and market relationship. The index refers to the size of government interventions in local markets.

Table B1: The Impact of Three Specific Dimensions of Marketization on The Relationship Between Corruption and Tax Management

	Government and market relationship		market intermediaries and the legal environment development		non-state sector development	
	(1) ETR	(2) ETR_adj	(3) ETR	(4) ETR_adj	(5) ETR	(6) ETR_adj
$Corruption_{i,t}$	-0.005*	-0.005*	-0.006**	-0.007**	-0.016***	-0.016***
	(-1.67)	(-1.68)	(-2.24)	(-2.49)	(-3.43)	(-3.53)
Corruption $squared_{i,t}$	0.000	0.000	0.000**	0.000**	0.000***	0.000***
	(1.39)	(1.44)	(2.32)	(2.54)	(3.44)	(3.51)
Corruption*$Govmark_{i,t}$	0.000	0.000				
	(0.81)	(0.64)				
Corruption squared * $Govmark_{i,t}$	-0.000	-0.000				
	(-0.41)	(-0.32)				
$Govmark_{i,t}$	-0.004	-0.004				
	(-0.60)	(-0.53)				
Corruption*$legal_{i,t}$			0.001**	0.001**		
			(2.01)	(2.11)		
Corruption squared * $legal_{i,t}$			-0.000*	-0.000*		
			(-1.84)	(-1.93)		
$Legal_{i,t}$			-0.010**	-0.010**		
			(-2.31)	(-2.46)		
Corruption*$Nonstate_{i,t}$					0.002***	0.002***
					(3.21)	(3.19)
Corruption squared * $Nonstate_{i,t}$					-0.000***	-0.000***
					(-3.22)	(-3.20)
$Nonstate_{i,t}$					-0.023**	-0.023**
					(-2.35)	(-2.34)
$Size_{i,t}$	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(-0.64)	(-0.59)	(-0.67)	(-0.62)	(-0.67)	(-0.62)
$Age_{i,t}$	0.009***	0.009***	0.009***	0.008***	0.009***	0.008***

Table B1: Continued

	(3.14)	(3.06)	(3.12)	(3.03)	(3.11)	(3.02)
$ROA_{i,t}$	-0.836***	-0.826***	-0.836***	-0.825***	-0.835***	-0.824***
	(-14.41)	(-14.29)	(-14.40)	(-14.28)	(-14.39)	(-14.27)
$Leverage_{i,t}$	0.049***	0.048***	0.049***	0.048***	0.050***	0.048***
	(3.38)	(3.28)	(3.38)	(3.28)	(3.40)	(3.30)
$MB_{i,t}$	-0.000	0.001	-0.000	0.000	-0.000	0.000
	(-0.02)	(0.07)	(-0.05)	(0.04)	(-0.05)	(0.05)
$Growth_{i,t}$	0.005	0.005	0.005	0.005	0.004	0.005
	(1.05)	(1.17)	(1.11)	(1.23)	(0.99)	(1.10)
$Top10_{i,t}$	0.000	0.000	0.000	0.000	0.000	0.000
	(1.30)	(1.16)	(1.29)	(1.15)	(1.29)	(1.15)
$Largest_{i,t}$	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(-0.46)	(-0.35)	(-0.47)	(-0.35)	(-0.44)	(-0.33)
$Discacc_{i,t}$	-0.013	-0.009	-0.013	-0.009	-0.013	-0.008
	(-1.01)	(-0.67)	(-1.03)	(-0.68)	(-1.01)	(-0.66)
Province	0.009	0.015	0.001	0.004	0.014	0.018
Industry	0.123***	0.010	0.123***	0.010	0.123***	0.010
Year	0.002	-0.003	0.006	0.003	0.000	-0.004
Constant	0.174**	0.071	0.214***	0.118**	0.307***	0.206**
	(2.56)	(1.05)	(3.70)	(2.05)	(3.78)	(2.54)
N	9033	9033	9033	9033	9033	9033
Adjusted R^2	0.164	0.082	0.164	0.082	0.164	0.083

Note: t statistics in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Govmark= Government and market relationship; legal= Development of market intermediaries and the legal environment; Nonstate= Development of the non-state sector

Source: Computed by the author